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SOCIAL ASPECTS OF SCHOOL HYGIENE.

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Doctor Armstrong uses New York City as an example in his thoughtful paper. What he says of school hygiene there will be found to apply with equal, if not greater, force elsewhere. There is always the danger that in the pressure of routine duties the larger objects are apt to be lost sight of. Doctor Armstrong's excellent analysis should make us pause and take stock of the broader views of the whole question of School Hygiene.

THE New York City Department of Health budget request for 1915 included an item of approximately $27,000 for additional dental clinics. This was justified on the ground that the 1913 records of medical inspection of the school children showed that about fifty-nine per cent. of the school enrollment were in need of dental care and that there were about 524,000 cases of dental defects in the city schools. Investigation proved that the meagre public and private facilities were totally inadequate to meet the demands of this situation. However, this request failed of approval by the Board of Estimate along with others of a similar character. This failure to take even a slight step forward toward the perfection of the preventive and remedial mechanism was a result of several factors among which were the following:

1. The pressure of the presumably well intentioned but often narrow-visioned opponents to the meeting of municipal responsibilities, opposing, on the grounds of short-sighted real estate or other private interests, any actual budget increase, even though a little study of the situation offers convincing proof that an ounce of prevention is still worth a pound of cure even in municipal affairs and that an increased gross expenditure for dental clinics would quite possibly mean a decrease in the final tax rate.

2. A seemingly incomprehensible preference on the part of some members of the Board of Estimate to the expenditure by the Board of Education of $3,600,000 now devoted annually to the reëducation of children held back in their classes probably in part at least by incapacitating though preventable and curable physical and mental defects. Twenty-seven thousand dol-

lars refused for prevention, $3,600,000 authorized for reëducation, part of which is for ineffective cure!

3. A lack of appreciation, first, of the economy of prevention and second, of the social responsibility which the city has to meet in providing wherever possible a sound physical foundation as a basis for the educational process.

4. There was lacking also an intelligent public opinion strong enough to make itself felt. Evidently it is the principles of prevention that must be taught and the false economy of ineffective curative and palliative measures in social organization.

This experience of the New York Department of Health is duplicated thousands of times in this country every year. It illustrates one social aspect—a very defective aspect—of school hygiene. It brings home the fact that our sins of today are *social* sins, such as child labor, prostitution, the prevalence of tuberculosis in industry, preventable but unremedied physical defects among school children, etc., rather than the much simpler sins of a few decades ago such as gambling and Sabbath breaking.

When one looks at the problems of public health in general or perhaps in particular of school hygiene, in a broader sense, it must be realized that the physical and mental ills that seemingly in an isolated way affect the individuals under observation, are indeed in reality evidence of *social* defect. They are, for the most part, social diseases to be controlled by social instruments. The retarding effect in the classroom of obstructive adenoids and tonsils, so far as the individual is concerned, is the result of an hypertrophy of glandular tissue; on the other hand and indeed more fundamental, the existence of these respiratory defects in a group of school children is indicative of such predisposing factors as a defective social organization for the detection and removal of school children's physical defects, lack of a preventive sense of social responsibility on the part of the school or health authorities, the appropriating bodies or possibly of the community at large, and a deficiency of social control by the state over the enforced environment of its potential citizens. Health defects are, for the most part, a manifestation of social disease. Eventually most, if not all disease, including the affections of school children, will probably be looked upon as a social defect and in this broad sense, therefore, all preventive, medical or constructive health work is of profound social significance.

To turn to the consideration and practical interpretation from a social and economic point of view of certain phases of health work, and particularly of school hygiene, one does not have to search far for illustrative material. Before proceeding with the main theme, however, one or two more or less haphazard observations may lend emphasis to the argument for a social interpretation of modern educational phenomena. One thinks, perhaps, first of the available mechanism for meeting the school health problem. This mechanism must be two sided. It must first discover the defects and the diseases; it must then cure. In addition there is much that can be

done by preventive, educational efforts and by positive, constructive health activities carried on through such agencies as the gymnasium, the playground, etc. How adequate is our discovering and remedial equipment? In New York City, which is by no means comparatively backward in this regard, the health of nearly 900,000 school children in over 700 school buildings, spread over an area of 326 square miles, is cared for by less than 350 doctors, nurses, surgeons and dentists, under the direction of the Health Department. Studies by the Bureau of Welfare of School Children of the Association for Improving the Condition of the Poor and by other agencies have emphasized the fact that this staff is wholly inadequate to care for the physical welfare of the school population. It is possible to examine only 37 per cent. of the school population each year, and of those examined 69.7 per cent. are reported in need of medical or dental attention. So much for the discovering mechanism. On the other hand, only 23.9 per cent. of the 69.7 per cent. discovered, are reported as treated for physical defects. A still smaller per cent. are actually cured. Inadequate as may be the channels for discovery, the facilities of a remedial character fail even more tragically to meet the situation.

Another thing of social significance to be mentioned here only in general terms is the intimacy of relationship and the interdependency between home and school conditions. It is easy to understand the inevitable social and economic reactions between the school and the home. We must remember also certain very specific relationships or at least potential relationships, such as, for instance, the indirect and hitherto unconscious effect of a hygienically and attractively served luncheon to the school child at noon, upon the mother and family in the tenement home. The not infrequent appearance of the mothers at the school lunch room, to inquire as to the preparation of a dish which particularly appealed to the son or daughter, gives opportunity for instruction regarding food selection, food preparation, sanitary food protection and the economy of proper refrigerating methods in the home, etc. Thus the school lunch has an unexpected educational, economic and social significance. This is a phase of home and school contact, suggestive of many other similar possibilities, illustrative of an almost untouched field of potential social reaction.

There are many things to be realized in a complete consideration of the social aspects of school hygiene, only the seemingly more important of which can be touched upon here. Before considering the strictly social phases of the problem, there are certain closely allied factors of more or less economic significance which might at least be briefly summarized.

1. *The Economy of Prevention.*—This was illustrated by the dental clinic proposal discussed at the beginning and in any case it ought assuredly to be unnecessary to say more than a word on this subject. In all phases of health work we have been preaching prevention rather than palliation, prophylaxis rather than cure, and it is

to be hoped that these principles, motivated by economic and social, as well as by humane considerations, will more effectively permeate the field of school hygiene. The economy of disease and defect prevention in comparison with the cost of reëducation ought to be obvious. This does not seem to be the case, however, and because it is realized that the economy argument, the decreased tax-rate argument, is the only effective instrument for the elimination of the antisocial inhibitive influence of selfish interests, the Bureau of Welfare of School Children in New York City is now conducting a study to ascertain the exact effect of defect correction upon school progress and the cost of this correction as compared with the cost of reëducating children retarded because of defective hearing, poor eyesight, adenoids and tonsils, deviated nasal septa, spinal curvatures, etc. Thus far only a small amount of preliminary data has been collected, though the following tabulation based on the ratings of twenty-four children in a public school on the lower East Side in the Borough of Manhattan may be perhaps considered indicative of what one would expect to find regarding the effect of defect correction upon school progress. Of course from figures so small as these it is impossible to draw final conclusions.

ERRORS IN REFRACTION CORRECTED.

	Before.		*After.*	
Rating.	Conduct.	Work.	Conduct.	Work.
A	16	3	18	3
B	7	19	6	20
C	1	2	0	1

As supplementary data in this connection reference should be made to a New York study conducted recently into the dental situation, where, after an examination of 1,394 cases treated at the municipal dental clinics, it was discovered that 566 cases or over 40 per cent. were under grade to the extent of from one to nine years, the average retardation being 1.86 years. How much of this retardation was attributable to the dental neglect is difficult to say without the further investigation now under way. It would seem, however, that the likelihood of a cause and effect relationship was great.

2. *The Necessity for Health Conservation.*—To use New York City as an example again, the results of the 1913 medical inspection of school children may be seen in the following tabulation:

PHYSICAL DEFECTS AMONG NEW YORK CITY'S SCHOOL CHILDREN, 1913.

Type of defect.	Number discovered.	Per cent. of children defective.	Estimated total defects if all had been inspected.
Vision	27,629	8.4	74,600
Hearing	1,645	.49	4,441
Defective nasal breathing	29,507	8.9	79,669
Hypertrophied tonsils	39,958	11.2	99,787
Pulmonary disease	590	.18	1,593
Cardiac disease	2,556	.77	6,901
Chorea	1,446	.44	3,904
Orthopedic defects	1,940	.45	4,023
Malnutrition	13,991	4.2	37,776
Defective teeth	194,207	59.	524,359

From this table it can be estimated that in the year 1913 there were probably about 837,000 cases of physical defects among the school children of New York City. This is not only a tremendous loss in efficiency, a great economic waste, an extremely poor conservation of human resources and a severe handicap upon the workings of the educational system, but it is placing an unnatural and an unnecessary limitation upon the social and economic welfare of a vital part of our national structure—the children, our potential citizens. A great deal of this disability is preventable or curable. Ought we not to realize that this is not only possible but worth while?

3. *The Value of Well Directed Health Expenditures.*—At the present time health appropriations, or at least appropriations for work done under the direction of health departments, although still meagre, are on the increase and now is an exceedingly crucial time in the expenditure of these public funds. It is especially necessary to spend them wisely and to spend them where they will do the most good. There are thousands of things that ought to be done and thousands of things the modern health department would like to do. It is not possible to do them all at once and since there must be a selection of activities, it is essential that those things be done first which are most worth while; which promise the biggest returns; which will prevent the most sickness; which will act most strongly as a health conserving agent.

The contrast between health and pseudo-health expenditures is no more clearly illustrated than by the appropriations for health departments, particularly in some of our smaller cities and towns. Here is seen most clearly the necessity for popular education which shall make possible rational value judgments concerning matters of health importance. The school hygienists, struggling for health department funds, frequently meet in battle with the plumbers and nuisance abaters before the august judges clothed with appropriating powers, and almost as frequently go down in defeat. In Auburn, New York, in 1913, out of a health appropriation of $12,320, $7,000 or 57 per cent. was spent on garbage disposal, leaving approximately $5,000 for such measures as the control of communicable diseases, anti-tuberculosis work, infant welfare work and school hygiene. In 1913, Elmira appropriated $6,000 for health and spent $1,200 for plumbing inspection; at the same time Elmira is credited with having no school inspection. This $1,200 spent on pipes and drains would be immensely more effective if devoted to the removal of defects in human plumbing, such as the adenoids and tonsils of school children. It is a contest between soil pipes and wind pipes, with the odds all in favor of the non-human variety. Fortunately in our large cities the health department budget does not have to cover plumbing inspection; in most of them the burden of garbage disposal has also been transferred to other municipal departments although nuisances of doubtful health significance are still abated by health inspectors. So long as it remains unusually difficult to obtain money for a

genuine health expenditure, such as medical school inspection, it is not economy to make the health appropriation cover a number of non-health activities.

On the distinctly social side of the question there are a number of points, many of which are generally applicable to all health work and a few of which are of special significance in school hygiene. Perhaps we can briefly present the more important of these as follows:

1. *Causes Direct and Indirect.*—In all health work, in anti-tuberculosis campaigns, in infant welfare agitations, in the elimination of physical and mental strain, fatigue and the neuroses of industry, in the prevention of physical defects among school children, it is essential that we be not blinded to the underlying, indirect, economic and social factors in the etiology of our problem. In health work one finds without difficulty many questions which are on the surface apparently straightforward health and disease problems and in connection with which because of the imperativeness of the health aspects, those interested in their solution fail to recognize and consequently do not attempt to deal with the underlying etiological factors, often of a distinct social and economic character. Such seems to be true, for instance, in many of our attempts to control and particularly to prevent disease among children. The workers are frequently concerned exclusively with the direct, exciting causes, such as bad food, improper diets, poor light and ventilation, bad seating facilities, filthy toilets, congestion, dangers of contact infection, etc.

For the most part those interested, suffering from an almost inevitable myopia association with close contact with the details of a problem, fail to see it in its entirety; they do not see the necessity for the correction of such predisposing factors as the inadequate family income, lack of adequate instruction regarding economic expenditures for and the proper use of foods, our unimaginative, individualistic, competitive system of industrial organization, the economic dependence of the mothers of the school children, the effects of bad breeding on the racial stock, the necessity for healthy soil in which to sow the seeds of education. In school hygiene there are very few directly causal conditions which are not traceable to these underlying factors. From them arise insufficient schooling, ignorance, poverty, child labor and unwise employment of the parents. To them may be traced bad housing, feeble-mindedness, hereditary physical defects and crime; drug addictions, disease, bad feeding, malnutrition and exposure. Poverty, ignorance and destitution are frequent factors in all kinds of ill health. Should ignorance be enlightened and destitution made impossible? Pretty far from public school pathology? Yes and no! Far from the palliative treatment of this disease of social organization, far perhaps from the *direct health* treatment of it, but very near the economic and social heart of the cure of the great socio-health defects of which preventable disease among children is one.

2. *Suppression versus Construction.*—Health work in the schools may per-

haps be outlined from one point of view somewhat as follows:

(a) The detection, isolation and suppression of communicable disease;

(b) The discovery and correction of non-communicable physical and mental defects;

(c) Education in hygiene to prevent the development of communicable and non-communicable defects;

(d) The encouragement of strength and resistance to infection and the development of healthy normal bodies and minds.

In great part the types of health work we have been used to in the past have been of an eliminative, suppressive character. In school hygiene, for instance, there was first attempted the control of communicable diseases. This was health work of a suppressive character. Of late, however, we have been giving increasing attention to the more constructive phases of school hygiene. We are now attempting, though indeed with grotesquely inadequate measures, the elimination of non-communicable defects, the prevention of improper and insufficient feeding and the resultant malnutrition by the establishment of lunches in the schools—an experiment in itself of great social importance, significant as a demonstration of the economy and social value of group feeding. We are now going still further in the use of prophylactic dental clinics, dental nurses, to say nothing of the comprehensive program for physical training and development.

This constructive element in modern health work is exceedingly promising and is to be found in all phases of health activity. In the factories, for instance, where industrial dusts and disease are associated, not only are shower baths provided where the dusts may be washed off and industrial disease *suppressed* but there is added to the equipment bathing pools where health and resistance to industrial disease may be *constructed*.

Thus modern, constructive, creative, health work, presents a previously lacking social content. In school work it indicates the realization of the social value of healthy children. It is attempting there to lay a firmer physical foundation upon which the world may hope to see constructed a finer social state. It realizes that without a physically sound substratum social evolution is bound to be abortive. It is from this point of view that school health work is of very high significance when socially interpreted.

3. *Education, the Social Instrument.*—The foundations of health education must be laid in the schools. This is of particular importance in the light of our modern conception of health work. In our more advanced communities we scarcely need speak longer of *public* health work. It is possible now to drop the word "public" and to talk of health. This means that personal health, personal hygiene, is to be the keynote of modern sanitation. The schools are, beyond comparison, the most valuable instruments for the instruction of society's members in the matters of hygiene.

A great deal is said regarding the use of the school as a social centre. Indeed, there is seen on all sides the increasing use of the schools as centres

for community life and in no field is this development of greater importance than in the dissemination of knowledge regarding infection and health preservation. Special literature on various municipal health problems is being constantly prepared and presented to the children. Health days of all kinds are set aside for special observance. Such potential channels for education as the school lunch system, not designed originally for special educational use, is now employed for the enhancement of knowledge regarding sanitary, dietary, economic and culinary food values. If the schools are to serve a further socio-hygienic purpose every effort must be made to bring to perfection the physical equipment so that it may serve during school hours as an example to the children of the essentials of a hygienic and sanitary environment. Finally if our educational system is to perform the most fundamental social usage to which it can be put, it must instill into the minds of the future citizens a more socialized conception of the purpose of existence and a greater sense of social responsibility. During the school period there must be created a conception of the purpose of living which shall make possible in the future the supplanting of the idea of personal gain by the ideal of social service.

4. *The Social Background of School Hygiene Work.*—While it is customary for us to classify disease, according to its origin, as environmental or constitutional, one can, with justice, say that all of the former and most of the latter class are of distinct social origin, depending upon social habits and customs for their transmission or development and to be combated by social instruments. This conception of disease is certainly applicable to the affections of school life and as the child is the ward of the state, society has here a most urgent obligation to maintain healthful conditions. This society is doing to the extent to which there has been developed a sense of social responsibility. There is the additional necessity for this basis of health in the schools if the educational system is to bear its best fruits. A physical foundation is essential to the successful and economic working of the educational mechanism. The pouring of pure wine into cracked vessels was ever a wasteful and futile process. An active social consciousness will make possible the avoidance of such tremendous wastes as are involved in an educational system which turns out annually, because it refuses to use well known and tested preventive measures, an army of incompetents, misfits, physical defectives and sufferers from mental inadequacy, all of whom will serve society abominably and exactly after the manner in which society has met its own obligations to them.

What is the value of and the motive force for all the health work, in school and out of it, that is now being undertaken? One can readily see that it has far reaching, social, economic and moral phases. Evidently it is an attempt to make sanitation universal, to eliminate preventable disease, to perfect the social and individual health status. It means increased human efficiency, greater earning capacity, a normal social life and a better physical

foundation for sound, social and spiritual growth. It indicates that society is attempting to meet its social responsibility by protecting the whole of human kind from the menace of its defective members. It recognizes that one of the keenest socio-sanitary indices of a community's life is the care which it takes of its future citizens.

Is it done, however, purely for the sake of the physical and mental health which will result? Is a pig in a clean pig pen any less a pig? Is modern society striving for cleanliness, decency, and health solely because they are worth while ends in themselves? Is the fullest meaning of constructive health work to be found in its social, political and ethical interpretation or does it have an even more fundamental significance? Is it not true that a healthy individual and a healthy society are the only adequate means or instruments through which may come a more perfect expression of the conscious life in the universe? The public health is not only inevitably entangled in the problems of economic readjustment and of social growth, but it is of intimate significance to both individual and social spiritual evolution. The health of the people, the physical and mental welfare of the nation and of the World are essential to the higher manifestation of conscious life, the *Elan Vital*, striving for a more perfect expression through the medium of human-kind.

PRINCIPLES OF ADMINSTRATIVE CONTROL OF COMMUNICABLE DISEASES IN LARGE CITIES.

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Read before a General Session of the American Public Health Association, Rochester, N. Y., September 10, 1915.

Doctor Billings discusses in this paper some of the subjects which must always be taken into consideration in controlling the communicable disease situation in any community—among these are the following: Registration, Recognition, Termination, Hospitalization, School Exclusion, Disinfection—and the Education and Instruction of Profession and Public.

THE following attempt to outline the principles of administrative control of communicable diseases in large cities, is based on the experience of New York City for the past twenty years. The credit for the first steps towards bringing such control into accordance with modern views, must be given to Dr. Hermann M. Biggs, then Bacteriologist of the Department, later its Medical Officer, and now the Commissioner of Health of New York State. Thanks to his unwearying personal efforts in the face of countless obstacles and discouragements, there were introduced the notification and registration of tuberculosis, along practically the same lines as at present, the laboratory diagnosis of tuberculosis and diphtheria, and the use of diphtheria antitoxin.

Many of the present procedures in New York City are the result of laboratory experiment, and of trial among small groups of persons before being generally introduced. The more important principles which have proved of value and have been adopted, may be grouped under the following heads:

Authorization.—Health authorities must have legal warrant for the various steps to be taken to preserve and protect the public health. In many communities the necessary laws and regulations must be adopted individually and one at a time by the legislature. This is a slow and cumbrous process, not calculated to give the best results, particularly in case of emergency during a sudden outbreak of an infectious disease. The granting to the health authorities the power to make their own regulations, which have the force of law, has been found the best working arrangement. In New York City these laws and regulations constitute the Sanitary Code, which can be amended and added to at any time by the Board of Health. The power thus granted might at first glance seem too large, but no Board has ever availed itself of this power in excess, nor abused its privileges.

Notification.—Full and complete knowledge of the number and location

of the cases of the various infectious diseases is of the first importance. Such notification must be complete and prompt. There should be penalties for failure to comply with notification regulations, which should be strictly enforced. Early reports are a *sine qua non*. Many of the infectious diseases are most contagious during the preliminary period before they are recognized, and even with the earliest possible diagnosis and report, most of the damage has already been done. So that in the more serious diseases, such as scarlet fever and diphtheria, physicians and institutions should be required to report their cases immediately by telephone, following up the same by a written report. The best method for checking and controlling the registration of cases of infectious disease is, of course, the comparison of all reports of deaths from such diseases with the roster of living cases.

As an aid to obtaining complete and satisfactory registration of infectious diseases, free laboratory examinations are of the greatest value as furnishing a *quid pro quo*. The most potent factor in overcoming the objections of the medical profession to the notification and registration of pulmonary tuberculosis was the free examination of sputum for physicians by the Department. The aid in diagnosis and treatment obtained thereby soon came to outweigh any opposition based on purely ethical reasons. In the same way the free examination, by the Department of Health, of cultures for diphtheria, of blood and excreta for typhoid fever, of spinal fluid for cerebro-spinal meningitis, and of blood for the Wassermann reaction in syphilis, have been of the greatest assistance in securing the registration of those diseases.

Registration.—The actual methods of registration of cases of infectious disease should be simple yet flexible. The recording of diffuse and detailed information as a matter of routine, simply because it can be obtained, is particularly to be avoided. The histories and records should be as simple as possible, and call for only such information as is needed for the proper supervision of the cases. If the city is divided into a number of districts, there should be a central record of all cases to identify cases disappearing in one district and appearing in another. This applies chiefly to cases of tuberculosis.

Recognition.—There should be a corps of physicians acting as diagnosticians, familiar with the signs and symptoms of the various infectious diseases, and with the various procedures to be followed in the disposition of cases, and trained in the carrying out of the various preventive immunizations and vaccinations, and in obtaining specimens of blood and spinal fluid for laboratory examination. Provision should also be made for the careful investigation, by trained observers, of epidemics and outbreaks of infectious diseases. This applies particularly to typhoid fever. Every case of this disease should be studied as if it were the starting point of a city-wide epidemic. The typhoid situation throughout this country has improved greatly of late years. Waterborne epidemics are now comparatively

rare, and, with the introduction of general pasteurization of milk supplies, the same is becoming true of milk-borne outbreaks.

Typhoid carriers have moved to the center of the stage, and the thoughts of all health authorities are occupied as to the best methods for their recognition, supervision and control.

Supervision.—In order to properly control infectious disease in large cities, each case should receive individual consideration and supervision. To best accomplish this, such cities should be divided into districts, each with its central office in charge of a chief physician, having under him a diagnostician and a field force of nurses. In all large communities, nurses are replacing physicians for routine inspectorial and supervisory work. A good physician is too expensive an article for general field work, and should be assigned only strictly medical duties calling for expert knowledge as to diagnósis and treatment.

To secure successful supervision of infectious diseases, the fullest and friendliest coöperation with the private physician is of the first importance. Given a capable, reliable physician, willing to take the responsibility for preventing the spread of the disease to others, the health authorities need do little more than second his efforts. Every possible use should be made of coördinate branches of the city government. Only too often will the police, health, charities and hospital authorities be found to be not only duplicating their efforts, but to be actually hindering one another. The coöperation of the police should particularly be secured. The policeman on his beat is the officer of the city coming into closest contact with the public. He is the one to note nuisances, and, witting or unwitting violations of sanitary regulations, and to ensure their discontinuance. Such a system of coöperation has recently been put into effect in New York City, with most satisfactory results.

Prevention.—Of prime importance in connection with the prevention of infectious diseases are municipal clinics. Of these, the tuberculosis clinics are the best known; there should be one in every district, each with its staff of trained physicians, the field nurses, familiar with the patients at their homes, serving as clinic nurses. Similar clinics for the treatment of persons exposed to rabies, for diagnosis and advice in venereal diseases, etc., are desirable. Theoretically, most of the various preventive measures against the spread of infectious diseases should be carried out by private physicians, the health authorities going no further than to furnish the necessary material. As a matter of fact the municipality will probably always have to do a certain amount of preventive medical work.

Again, it is often advisable, in order to introduce valuable new procedures, for the authorities to have the same done by its physicians until the medical profession and the public realize their value and they come to be recognized as routine procedures, when their performance can be turned over to the medical profession. This was the case in New York City as

regards diphtheria. A corps of inspectors for the free administration of diphtheria antitoxin and the performance of intubation was organized in 1895. It continued in existence until 1913, when it was felt that the education of the public was complete, and such free service at the patient's home was discontinued. The Department still administers diphtheria antitoxin, but only to patients without physicians and about to be removed to its hospitals. Every practising physician should be able to administer the various antitoxins, sera and vaccines as readily as he can use a clinical thermometer.

Among the various preventive measures to be provided by municipalities, are vaccination, immunization against diphtheria and typhoid fever, the treatment of rabies, whooping cough, etc.

Termination.—With the steady advance of our knowledge regarding infectious diseases, the methods of termination of cases have become more logical and satisfactory. Diphtheria furnishes an excellent example of this, laboratory examination telling us when danger of infection of others is passed and quarantine can be raised. No persons recovering from typhoid fever should be discharged from supervision and allowed to resume their occupations until examination of the excreta shows that typhoid bacilli are no longer present. The quarantine period in measles has been reduced from two and three weeks to five days, thanks to the investigations of Anderson and Goldberger. When we know and can demonstrate the presence or absence of the causative agent in cases of scarlet fever, our control of that disease will be greatly inproved.

Hospitalization.—The segregation of cases of infectious diseases in isolation hospitals is no longer looked upon as the ideal method for their control. It is probable that eventually the old "contagious disease hospitals" will be done away with, and that all large general hospitals will care for the cases of infectious disease occurring in their districts. There must, of course, be institutions for the care of cases in which the necessary precautions for the protection of others cannot or will not be observed.

Day camps and day nurseries are valuable adjuvants, and their facilities should be available in all large cities. It is probable that the best means of reducing the death-rate among infants from whooping cough, would be the removal of all infants exposed to infection to such day camps.

School Exclusion.—The principles of control of disease in schools in New York City will be dwelt upon by another speaker. An important point to be borne in mind is the avoidance of unnecessary loss of school time. This is particularly true in cities such as New York, where children must present evidence of a certain period of school attendance before being allowed to begin work. Authorities now hold that the vast majority of cases of infectious diseases are transmitted by direct contact. Insusceptible children and teachers, *i. e.*, those who have had the disease in question, rarely transmit infection and should

not be excluded from school when cases occur in their homes. Such exemption from exclusion will be greatly facilitated if the municipality supplies every child that has suffered from an excludable infectious disease, with a certificate to that effect. This procedure has been tried in New York City for almost a year with excellent results.

Disinfection.—Terminal disinfection no longer holds a prominent place in the control of infectious diseases, for the reason that by the time the infective agent has disappeared from the person of the patient, it has long since disappeared from the premises and surroundings. Terminal fumigation in cases of infectious diseases has been abandoned by the Department of Health of New York City for two reasons: First, because, as stated above, there is probably little or no contagion to destroy, and, secondly, because the process itself, under ordinary conditions, has but limited disinfecting powers. Exception is made as regards sulphur fumigation for vermin. Better and more effective disinfection can be secured by means of thorough cleaning in conjunction with fresh air and sunlight, nature's own disinfectants. In many instances premises should be renovated, *i. e.*, re-papered and re-painted. In New York City this is done by the owner upon receipt of notice from the Department of Health. Thousands of such renovations are done yearly, the great majority voluntarily.

Education and Instruction of Profession and Public.—The principles of the control of infectious diseases along these lines by circulars, leaflets, weekly publications, lectures, moving picture shows, etc., will be described by another speaker.

Conclusion.—In conclusion a word should be said as to nomenclature. The words "contagious," "communicable" and "infectious" are used in various cities and states to indicate sometimes the same thing, and again, different classifications of diseases.

In New York City, diphtheria, scarlet fever, smallpox, measles and other acute exanthemata, were formerly classified as "contagious," while tuberculosis, typhoid fever, cerebrospinal meningitis and acute poliomyelitis were classified as "communicable" and "very readily communicable." Of late years these terms have been abandoned, and all such diseases are classed under the one heading, "infectious." The only sub-classification adopted has been that of "major infectious diseases" for those calling for investigation and supervision by the Department, and "minor infectious diseases" for those not so investigated. This last sub-division has been adopted purely for the sake of convenience.

It would be well could some uniform agreement be reached in this matter. On all such broad general principles, health authorities should, as far as possible, be in agreement.

THE USE OF THE UNEMPLOYED IN THE FIELD OF SANITATION

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Philadelphia, Pa.

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Unemployment and under employment are topics that the average health officer pays little attention to. No one will deny the significance of unemployment when considered solely from the public health point of view. Men and women who are out of work or who are only working part time necessarily are unable to buy proper food and shelter which are so essential for their physical well being. Mr. McCrudden, in this paper, tells in an interesting manner how a number of unemployed men were given work through the Health Department of the City of Philadelphia. Not only did they benefit themselves but the work they did was a direct benefit to the entire community. This is a subject that health officials generally might well give more attention to.

IT MAY be safely and consistently stated that the problems which confront the health officers of the larger cities of this country are very nearly identical, and that many conditions present themselves for correction to which the usual processes are difficult to apply.

Reference is made particularly to the petty nuisances so often presented by the taxpayer which cannot be abated without the use of money, and which demand so much of the attention of the health official.

The essential feature in the solution of such problems is the fact that the nuisance must be speedily abated and the necessary work performed promptly for the correction of the insanitary condition.

Often the complicated process incident to the performance of work of this character requires more labor than the actual doing of the work itself. Mention may be made of the problems of the private alley; the vacant lot, especially where owners are inaccessible, or not definitely known; mosquito breeding places, which require but little labor in their abatement, and the determination of the nuisances which are caused by water entering cellars or basements.

The demands of the taxpayer are usually more urgent and persistent for the abatement of conditions such as these, than any clamor for putting into effect preventive measures conforming to modern ideas on sanitation.

In the absence of sufficient funds, many of the smaller and more troublesome nuisances must of necessity give the health officer more or less bother. Of course, reference is made particularly to the correction of nuisance which must be controlled entirely by the expenditure of money and cannot be handled by prosecution.

Frequently nuisances and insanitary conditions may be properly laid at the

door of the municipality itself. Others exist on property which is in litigation and subject to restraining orders. Some are properties legally acquired by a municipality but with no funds for improvement. The problem of how to best handle such conditions has always been a troublesome one, and consequently the health officer must find the best available methods of improving sanitary conditions within the limited means at his disposal.

In these days of city planning and town development, and with the efforts being put forth for the encouragement of civic pride in our citizens, we have confronting us these apparently everlasting conditions in our cities. As an example, when the ownership of vacant land is divided into thirty-sixths, or some other ridiculous fraction, or when, as in many cases, a property is already in the hands of the sheriff, the difficulty in abating a nuisance existing thereon is self evident. To convert an insanitary piéce of ground into a place that will appeal to the esthetic sense is to effect a civic improvement. In some cities, there are many parcels of vacant ground known as "no man's land," where ownership cannot be determined nor responsibility placed.

It is highly important that the sanitary division of any department of health should be supplied with an ample labor force in order to allow the health officer to take prompt and efficient action in the abatement of nuisances. The amount of good accomplished by the employment of such a labor force will more than offset the cost of its maintenance. This has been proven many times.

The problem of the use of the unemployed in the field of sanitation is one which has seldom presented itself to the Health Officer in a co-related form. During the past winter, many of the larger cities appropriated from their general treasury a sum of money which was thought to be sufficient to relieve some of the economic conditions which always present themselves during "dull or hard times," and added to this were those contributions so generously made by the charitably inclined.

Among the difficulties encountered by the boards or committees which handled such funds for emergency aid use, the problem arose of how best to furnish employment to be paid for from such a treasury.

The department of health or sanitation in any large city can without difficulty employ as many laborers as may be assigned, and surely there is nothing that can be of more advantage to the general community than the steps taken by health authorities to make safe and to prolong human life.

In Philadelphia, money was appropriated by city councils, duly approved by the Mayor and given in charge of the Director of the Department of Public Health and Charities, and an Emergency Aid Committee. It was the duty of this joint committee to solve the problem and dispose of the funds in a proper and legitimate manner.

The difficulty which is often experienced in securing employment for men who are to be paid out of funds so

appropriated was very easily overcome by the assignment of more than fifty per cent. of the men employed, to the Department of Health, with the result that very many insanitary conditions in the city were corrected and the community was inspired with a spirit of civic pride which will result to the ultimate benefit of the city itself.

Without doubt, there is sufficient work in the field of sanitation in the larger cities of this country to thus employ men. The classes of nuisances cited are typical of every city. No work was performed by these men who were assigned to the Department of Health and Charities, which could be properly chargeable to the property owner.

It was from the funds of the taxpayer that money was secured for the employment of these unemployed and consequently it was but just and reasonable that the taxpayers should receive some return from such expenditures.

The men assigned were divided into three corps in charge of a supervising sanitary inspector, and were employed on an eight-hour day basis, wages being paid weekly. An amount per hour was paid the men, sufficient to give them a livelihood, yet at the same time small enough to insure a proper determination on the part of these men to secure more profitable employment.

Not being able to determine accurately the length of time these "unemployed" would be at the service of the Health Department, it was deemed most important to accomplish that which would be of the most benefit to the families of men who sought Emergency Aid Relief.

Much ground has been purchased recently by the city of Philadelphia for playground purposes, awaiting future appropriations for their development into a proper place for the pastimes of children.

Much of this vacant ground was under the jurisdiction of the municipal government, and, as there were no funds appropriated for proper maintenance, there arose insanitary conditions similar to and highly comparable with any other piece of vacant ground in the well built up section of the city.

The men furnished to the Health Department were turned into these places first, and every available method was adopted to convert such vacant ground into a sanitary playground, to be used during the summer months. Of course, this did not include the purchase of any apparatus or fixtures, but only included sanitary development.

Thousands of cubic yards of refuse and filth were gathered and collected from these lots and vacant pieces of ground. Refuse material was removed and in many cases these lots were turned into neighborhood recreation centers, tennis courts, and other places of amusement.

There were small, narrow alleyways, unpaved and with divided responsibility as to ownership, where the Department of Health was compelled to abate nuisances and lien the property for costs. Knowing that it would take considerable money to properly grade and pave all of the small alleys in the older section of the city, and there

being no funds available, such conditions were allowed to remain from year to year. The men assigned and paid from the emergency aid funds were turned into these alleyways and these places were put into such condition as had not been known for a great number of years previous.

Where such civic improvements were made, a spirit was imbued in the citizens of the neighborhood affected. Voluntary sanitary inspectors were assigned, and a disposition and inclination to insist upon the proper sanitary maintenance of such places was resolved upon.

Mosquito breeding places on property owned by the city and in the Park were given attention and many miles of ditching were made. The shores of the water courses and ditches were raked and many mosquito breeding ponds were filled with the proper material.

Vacant properties that had been acquired by the city through delinquent taxes were taken care of and put in sanitary condition, and many that were involved in litigation which restrained the Department from taking action, were given attention, to the benefit of the neighborhood surrounding. The city hospitals were placed in position to do many of the little things which go undone because of the importance of greater things. This, of course, does not apply to the bettering of sanitary conditions, but was the means of placing many small improvements which would have involved the expenditure of much money had not this force of men been available.

The grading and proper maintenance of the lawns, and work in and around the boiler rooms, the construction of ditches, the laying of terra cotta drain pipes, the laying out of roadways, repairing of fences and buildings, painting, carpentering, etc., was included in the work performed at the hospitals.

These men, being in charge of experienced supervising sanitary inspectors, were able to accomplish much work and at the same time to let the tax-paying citizen feel that some return was being given for the money which had been appropriated.

The fact that the men did not remain a great length of time on the payroll of the Emergency Aid Committee, but resigned as soon as a more congenial and better paying work was presented, proved that the financial plan was a good one, and that very nearly all of the unemployed were properly taken care of.

The class of workmen furnished for this work of sanitation was above the average. There were included stonemasons, plumbers, carpenters, electricians, painters, bricklayers, machinists, cement finishers, blacksmiths, and many high class laborers.

A complete census was made of the entire force and as a result the men were assigned to work which they were most capable of performing. This census gave the Department some very interesting data, such as the name, address, nationality, religion, citizenship, length of time unemployed, wages received when employed, occupation or profession, and the approximate amount of wages lost during the time of unemployment.

A complete cost account was kept,

thus enabling the Department to file with its records new cost data. It gave also a very accurate estimate of the cost of abating various classes of nuisances.

Notices printed in colors which were more or less attractive were posted on properties where work had been performed, giving warning that any violation of sanitary laws would be met with immediate prosecution.

The Police Department rendered efficient coöperation by the enforcement of the law and by reporting to the Health Department immediately any flagrant violation of the same.

A systematic and efficient follow-up system was inaugurated and, with the coöperation of the citizens, a careful watch is to be kept to prevent the creation of insanitary conditions.

There is a feeling that the city has been greatly benefited by these measures and that civic pride has been developed in many neighborhoods. There appears to be no doubt that the knowledge of the accomplishment and correction of an insanitary condition acts as an encouragement to the citizens to see that such improvements remain permanently.

THE PREVENTION AND ARREST OF DISEASES OF THE CARDIO-RENAL-VASCULAR SYSTEM.

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DURING recent years abundant evidence has been presented demonstrating an increasing mortality in this country from chronic diseases of the vital machinery. Even though no such increase were apparent, the fact that in 1913 approximately 130,000 citizens of the United States between the ages of 30 and 60 years died of these maladies evidences a tremendous loss of life from preventable or postponable disease.

This mortality also reflects widespread degeneration, impairment and premature decay. Present knowledge does not enable us closely to approximate the ratio of impairment to the mortality, but recent examinations by the Life Extension Institute of large groups of supposedly healthy wage-earners in various walks of life, show that such impairment is actually widespread, and reaches down into the early years of life.

For example: Among well-conditioned industrial workers (average age 32) in the Ford Motor Company, in Detroit, we found more than 50 per cent. presenting some degree of arterial change, and more than 45 per cent. showing varying degrees of albuminuria, glycosuria, or other inportant urinary impairments.

In commercial groups in New York City (average age 27) we found 42 per cent. showing varying degrees of arterial change, and 40 per cent. showing albuminuria, casts, glycosuria or other important urinary impairments.

I have analyzed and compared these findings in detail in an address before the section on Vital Statistics to which those who are interested are referred for the full figures and for information regarding the technique, standards and methods observed in eliciting this evidence. Every possible check has been applied to the evidence and it has carefully been considered by members of our Hygiene Reference Board who are specially qualified to pass upon it.

Conceding that premature physical decay is one of the most pressing public health problems of the hour, it is natural that we should seek some principal cause for the encroachment of these chronic maladies that are responsible for it. It is true that the mortality trend in this country suggests the possible existence of some special influence or group of influences operating unduly to strain or injure our vital organs. Mere civilization cannot account for the increase in these maladies, as other highly civilized countries do not show the same trend.

The survival of the unfit is not a satisfying explanation, as these chronic diseases of vital tissue and the ac-

companying mortality at the ages when their fatality is most manifest are decreasing in countries where the saving in life in infancy and childhood has been greatest. Furthermore, the increasing death-rate from cardio-vascular and renal disease is not confined to any one class in the population, but seems to be a widespread and general condition, affecting all classes. It is quite possible that the peculiar form of our civilization, its rapid development, and the free and liberal habits of living engendered by great national prosperity, together with the strain and struggle of all classes, high or low, for still greater prosperity and more lavish expenditure, are conditions fundamental to the special causes that immediately operate to break down the vital machinery of our bodies. It is also possible that there is some biologic factor at work, independent of individual physical condition or environment.

Whatever the primary and fundamental causes may be that sap our vigor and bring about premature decay, we may be fairly certain that they could be excluded by the practice of personal hygiene and by rational eugenics. By leading a hygienic life, we may escape the operation of these forces, whatever they may be, that seek to destroy us.

There is a certain myth about the "seven ages of man" that modern science should dissipate. Think of the priceless asset of a healthy well-developed body at age 30, and then reflect how soon this body usually begins to settle down into those traditional ages marking the progress of decay. This time-honored toboggan-slide to senility is not a necessary movement. There is, in fact, no proof that this decay arises from within, as the result of physiological movement toward a fixed and predetermined physical destruction within a definite time limit.

The inherited resistant quality of body cells is, of course, an important factor, as physical decay arises from cell injury, from trauma, poison, infection, or over-work. Mayo has well stated that in most cases disease is the result of infection. Life is a constant struggle with microörganisms. We now know that many chronic diseases, such as so-called chronic rheumatism, rheumatic gout and other chronic joint changes, ulcer of the stomach, organic heart and kidney affection, are caused by low grade infection working slowly and insidiously. Acute rheumatism, which is well known to be a frank infection, often seriously damages the cardio-vascular system. Such conditions were formerly ascribed to uric acid, lactic acid, to faulty metabolism, damp air, red meats, and various other agencies, contributory perhaps but not the immediate and principal cause of such maladies. We now trace them down in many cases to infection, traveling from some focus in the body—tooth sockets, nasal cavities or accessory sinuses, seminal vesicles, or other favorable culture stations for bacteria. The infective organisms, chiefly of the pneumococcus - streptococcus group, block the small arteries in the various regions of their selection and establish a vicious pathological circle of lowered vitality, lowered resistance in the part affected coincident with bacterial at-

tack. It is important to recognize the actual physical destruction caused by such organisms as the pneumococcus-streptococcus group, entirely apart from the protein poison that they set free in various ways as pointed out by Vaughan. Undoubtedly this protein poison may seriously injure the cells forming the coats of the arteries and other vital tissues. The freedom with which these microörganisms not only travel through the blood stream, but migrate through the tissues and penetrate the organs of the body, and the fact that the physical condition under which they are cultured in the primary focus, whether tooth socket, accessory sinus or middle ear, determines in large measure the selective affinity of these organisms for special regions, such as the stomach, heart, kidneys, appendix, gall bladder, etc., are among the most startling revelations of modern pathology. The degree of cell resistance to such influences is, of course, often an inherited quality.

It would seem, therefore, that the first requisite in combatting the progress toward physical decay is to eliminate all infective foci from the body. This does not mean to wait for toothache, headache, fever, or other announcement of such conditions, but to begin in infancy to regularly inspect the body from head to foot, especially those regions that are ideal culture tubes for bacteria, and to prevent the development of these foci of disease. This is the simple, elementary obvious first step in the practical work of prevention after the individual lands upon the earth.

These physical examinations should be conducted with great thoroughness for the purpose of uncovering not only physical defects and impairments, but foci of infection, especially in the mouth, nose and throat.

The public health officer, while striving to eliminate an occasional focus in the community of typhoid infection, should also labor to eliminate the foci of streptococcal infection that exist in millions of mouths throughout the country.

The Institute's examinations suggest the possibility of pyorrhea, or so-called Rigg's disease, being a communicable disease. Pure mouths are just as important as pure food and pure water.

Such examinations should also be supplemented by close inquiry into personal and family history and living habits, and the individual—what he is, what he does, and what he leaves undone—studied as a whole, and guidance given him as to how to live.

Physical examination is, however, by no means an all-sufficient measure. It is impossible to keep the human body sterile, so we must anticipate that in spite of periodic inspections bacteria will occasionally gain a foothold in intervals of lowered resistance, due to fatigue, exposure and various forms of strain or poisoning.

To raise the body to its maximum resisting power is, therefore, equally important work. Here we enter a broad field, that not yet thoroughly explored country, of eugenics and of personal hygiene. I realize the complexity of the problems connected with eugenics, and the limitations of our knowledge on this subject, but I rec-

ognize a clear duty to prevent, by every possible means, the mating of the obviously unfit. The fact that we may lose an occasional poet does not matter. The reeking mass of pathology, of drunkenness, of insanity, of laziness, inefficiency, crime and immorality that burdens humanity is too high a price to pay even for a Shakespeare or a Shelley. The human race may well take its chances of securing its literature, poetry and art from sound minds and sound bodies. There is too much pathology in modern literature, anyway, literary infection quite as insidious and deadly as the pneumococcus-streptococcus group of material microörganisms.

Having secured the birthright of a reasonably good heredity, personal hygiene must then be enlisted to develop and improve this birthright at the highest possible rate of interest.

To teach the people how to live is a problem of increasing importance to those who are working for the public health.

As a help to the health officers and others who desire to extend this work, I submit a list of topics and suggestions derived from the literature of the Institute and from its manual "How to Live":

AIR.

Housing.

Windows
Features of Ventilation
Air and Catching Cold
Drafts
Window Boards
Air Fans
Heating Systems
Cool Air
Dry Air
Humidity
Freshness
Tobacco Smoke
Dust
Bacteria
Sunlight

Clothing.

Porous Clothes
Air Baths
Tight Clothing
Shoes
Cottons, Linens, Woolens
Color

Outdoor Living.

Out-of-door Air
Dampness
Outdoor Schools
Outdoor Recreations
Occupations

Outdoor Sleeping.

Tuberculosis
Well Persons
Vital Resistance
Night Air
Protection from Cold
Sleeping Tents
Outdoor Tents

Deep Breathing.

Breathing Exercises
Muscular Exercise
Singing
Mental State

FOOD.

Quantity of Food.

Calories
Favorable Weight
Overweight
Accessories
Underweight
Diet in Middle Life
Diet in Hot Weather
Brainwork and Eating
Eating when Fatigued

Protein Foods.

Protein, Fat and Carbohydrate
Proportion of Protein
Human Milk
Excessive Use of High Protein Foods
Injuries from Over-Abundance of Protein
Animal Protein

Hard, Bulky and Uncooked Foods.

Hard Foods
Bulk Versus Concentrated Foods
Raw Foods
Vitamines
Raw Milk
Disinfection
Acids and Inorganic Salts

Thorough Mastication.

Prolonged Relish of Foods
The First Three Mouthfuls
Evils of Insufficient Mastication
Careful Tasting
Increased Enjoyment
Choosing Foods
"Good" and "Bad" Foods
Salt, Pepper, Spices
Sugar and Candy
The Digestibility of so-called Indigestible Foods
Avoidance of Fads
Necessity of Medical Examination

POISONS.

Constipation.

Use of Sour Milk
Evidences of Injury
Retention of Body Wastes
Water Drinking
Laxative Foods
Bran and Agar Agar
Mineral Oils
Avoiding Drugs
Enemas
Massage of the Colon
Number of Defecations
Establishing Proper Habits

Posture.

The "Consumptive Stoop"
Breathing and Posture
Standing and Walking
The Feet
Toeing Straightforward
Chairs
Sitting
Posture in Children
Posture and Character

Poisons from Without.

Habit-Forming Drugs and Patent Medicines
Reducing the Habit
Alcohol and Infectious Diseases
Tobacco
Germs
Cold and LaGrippe Germs
Tuberculosis Germs
Mosquito-Borne Malaria and Yellow Fever
Typhoid Free Water
Typhoid Free Milk
The "Typhoid Fly"
Other Vermin
The Hookworm
Sex Infection

Teeth and Gums.

Mouth Dangers
Dental Decay
Pyorrhoea
Systematic Injuries from Mouth Infection
Focal Infection
Lowered Resistance
Saving Teeth
Keeping the Mouth Aseptic
Over-Dentistried Teeth
Teeth and Infectious Diseases
Irregularities of Teeth
The Temporary Teeth
Vigorous Use of Jaws
Periodic Examination
Cleansing
Kind of Brush
Tongue Brushing
Dental Floss
Tooth Powders and Pastes
Emetin
Alkaline
Food Acids
Erosion
General Hygiene

ACTIVITY.

Work, Play, Rest and Sleep.

Need of Work
Prevention of Overstrain
Working Hours
Monotony and Interruption
Eyestrain
The Physical Worker
The Brain Worker
A Daily Rhythm
Muscular Exercise
Outdoor Exercise in Winter
Enthusiasm in Exercise

Mechanical Home Exerciser
Stimulating Heart and Lungs
The Greek Ideal
Injuries from College Athletics
Possibilities in Exercise
Exercise after Meals
Exercise of Mind, Will and Emotions
The Avocation
Enjoy Recreation
Pleasures of Walking
Games
Dancing
Card Playing
Suicidal Amusement
Relaxation
Bathing and Swimming
How to Induce Sleep
Cleanliness
Perspiration
Hours of Sleep
Eating before Retiring
Place of Sleep
Character of Thoughts
Morbid Literature
Pillows
Type of Bed

Serenity and Poise.

Influence of Health on the Character
The "Cause"
Mental Rewards from Health
Influence of the Mind on Health
Physical Manifestations
The Demands of the Mind
Hypochondriacs
"Mind Cures"
Rejoice at Things as They Are
Serenity an Art
One Day at a Time
The Hurry-Habit
Religion and Philosophy
Control of Attention
Making up One's Mind
Intensity of Desires
Religion of Healthymindedness
The Habit of Happiness

Hygiene in General.

The Fifteen Rules of Hygiene.

The aids to health discussed in the preceding divisions may be summarized in specific formulas classified under the four heads, Air, Food, Poisons, and Activity, corresponding to the four chapters; and under fifteen sub-heads, corresponding to the fifteen sections.

The Rules of Hygiene have been summarized by Prof. Irving Fisher after conference with our Hygiene Reference Board, as follows:

Air.

1. Ventilate every room you occupy
2. Wear light, loose and porous clothes
3. Seek out-of-door occupations and recreations
4. Sleep out, if you can
5. Breathe deeply

Food.

6. Avoid overeating and overweight
7. Eat sparingly of meat and eggs
8. Eat some hard, some bulky, some raw foods
9. Eat slowly

Poisons.

10. Evacuate thoroughly, regularly and frequently
11. Stand, sit and walk erect
12. Do not allow poisons and infections to enter the body
13. Keep the teeth, gums and tongue clean

Activity.

14. Work, play, rest and sleep in moderation
15. Keep serene

"The application of these rules to one's daily life must be varied with each individual. The most practical method is for the individual to begin the improvement he would seek by constructing a typical day's program in which time is provided for, say, breathing and other exercises in bed, bath, toilet, walk to business, meals, amusement, etc., with special notes and memoranda as to the particular faults of omission and commission to be corrected. One might also, as Benjamin Franklin records in his autobiography, keep a daily record for a week as to how nearly the program is lived up to. By dint of such and other stimuli, the transition in habits can be made, after which the rules cease to be 'rules,' as carrying any sense of restriction, and become automatic like putting on or taking off one's clothes."

The Unity of Hygiene.

The Rules Interrelated
Specialists
Remote Effects of Ailments

Popular Delusions
So-Called "Overwork"
An All-Round Régime

OBSTACLES TO HYGIENE.

Effort of the Will
Cost of Good Health
Missionaries from among the Poor
Cost of Foods
Repaid Cost
"I have no time"
"Too much trouble"
Simplicity of Hygienic Living

THE POSSIBILITIES OF HYGIENE.

The Preventibility of Disease and Death
Impairments Unsuspected
Minor Ailments
The Personal Equation
Over Confidence
Possible Health Attainments

HYGIENE AND CIVILIZATION.

Natural Adjustments Upset
Civilized Housing
Houses Unhygienic
Effects on Different Races
Clothing Unhygienic
Compensation for Civilization
Soft Foods Unhygienic
Concentrated Food Unhygienic
Hurry Unhygienic
Use of Flesh Foods
Other Evils of Civilization
Shortened Human Life
No Return to Nature; must Live in the Present

THE FIELDS OF HYGIENE.

Public Versus Individual Hygiene
Coöperation Necessary
The Consumer's Duty
Quacks and Quackery
Vaccination
Social Evil
Eugenics

Notes on Food.

Balancing the Diet
Common Foods Classified
Table of Food Values
Calories of Food Consumed in Different Occupations
Bibliography
Diet and Fatigue

Notes on Overweight and Underweight.

Mortality of Men over Average Weight
Mortality of Women over Average Weight
Diet for Overweight
Exercise for Overweight
Mortality of Men under Average Weight
Diet for Underweight
Exercise for Underweight

Notes on Posture.

Corrective Exercises for Faulty Posture
Corrective Exercises for Flat Foot
Consult Specialist
Detecting Weak Feet

Notes on Alcohol.

Influence of Alcohol on Longevity
Consumption of Alcohol
Laboratory and Clinical Evidence Relating to Physiological Effects of Alcohol
Effect on Brain and Nervous System
Influence on Bodily Resistance to Disease
Effect on Circulation
Food Value
Effect on Offspring
Bibliography

Notes on Tobacco.

What It Is
History
Composition
Effects on Animals and Man
Smoking and Athletics
Smoking and Scholastic Standing
Insurance Experience
Poisonous Effects—Hardened Arteries
Heart and Circulation
Surgical Operations
Acute Diseases
Insomnia
Blindness
Catarrh
Acid Dyspepsia
Summary
Bibliography

Avoiding Colds.

Infection
Local Resistance
General Resistance
Skin Training
Fresh Air

Other Means
Nasal Toilet
Emergency Treatment of Colds

Signs of Increase of Degenerative Diseases.

Increases and Decreases in Death-Rate by Age Periods
Death-Rate Registration Area Organic Diseases
Occupied Males-Increase, Decrease from Certain Diseases

Comparison of Degenerative Tendencies Among Nations.

United States
Prussia
France
Italy
Sweden
Death-Rate per 1,000 in Prussia by Age Groups
Death-Rate per 1,000 in Denmark by Age Groups
Death-Rate per 1,000 in Sweden by Age Groups
Death-Rates at 12 Groups of Ages, and Infant Mortality in England and Wales

Eugenics.

Attainable through Heredity
What Eugenics is Not
Discovery of Heredity Laws
Rules of Eugenics
Inheritable Traits
Physical
Mental
Moral
Distribution of Traits
Socially Noble and Ignoble Traits
A Majority of Sterling Traits
Successive Generations and Fraternities
Results of Specific Matings
Technicalities Explained
Dominant and Recessive Traits
Instances of Eugenic Improvement
Education, Segregation, Sterilization
Bibliography

Conceding that the immediate cause of physical decay and breakdown is largely a matter of infection, we must continually remember that the soil is prepared by heredity, and by the mode of life. Organs that are overworked, or tissues that are poisoned offer poor resistance to infection. In considering the effect of alcohol and tobacco, we must bear in mind that it is not alone the immediate toxic effects of such drugs, but their collateral effects that may impair the organism. The higher death-rate among so-called moderate users of alcohol can no longer be questioned, in the light of recently assembled insurance experience. Statistical evidence showing the influence of tobacco on the death-rate is lacking, but there is abundant laboratory evidence to support the view that it is an arterial poison. It seems wise, therefore, to take the benefit of such doubt as there may be, while we are seeking to protect the public from the encroachment of this class of diseases. The consumption of tobacco in this country is enormous. It is three times, per capita, that of Great Britain. Here again it is not alone the poisonous effects of tobacco, on heart and circulation, but its influence as a narcotic, in lessening physical activity and in forming one feature of careless self-indulgent living.

Over-nourishment is another important influence. The high mortality among overweights has been clearly shown by life insurance experience. The examinations of the Institute likewise show a high proportion of impairments of the heart, blood vessels and kidneys in those showing overweight and over-nourishment.

In all these classes I have mentioned—alcohol users, tobacco users, overweights—the proportion of cardio-vascular-renal impairments is higher

than it is in those not presenting these conditions.

The most unfavorable class that we have thus far examined is those affected with mouth infection. In one group of 1,000 industrial workers, 78 per cent. of those thus affected showed some impairment of heart, blood vessels or kidneys.

Lack of exercise among the sedentary and over-exercise among manual laborers and athletes must both be recognized as important influences.

Constipation, colonic stasis, is also a potent factor, whether its specific effect be that of sub-infection or chemical poisoning. On the one extreme we have Adami stoutly for sub-infection; on the other, Lane, insisting on so-called auto-intoxication, an unfortunate and improper term, which should be restricted to poisons formed by the body cells. Whatever view one takes, no one can question the importance of regularly clearing the intestinal canal. The favorable effect of such a measure in well-established cases of arteriosclerosis cannot be disputed. Also we must not too readily consign to the scrap heap Metchnikoff's theory as to the value of sour milk in limiting bacterial activity in the large intestines especially in view of present knowledge regarding sub-infection or the migrating tendencies of the bacterial flora.

About 16 per cent. of people we have examined admit constipation and a much larger number suffer from colonic stasis without realizing it. Of those admitting constipation, 69 per cent. showed affection of heart, blood vessels or kidneys.

Syphilis must of course be considered in relation to arterial and organic disease. Syphilis is essentially a disease of the arteries, and I think that the arterial disease due to syphilis should be considered separately, as syphilis, and not grouped with general arteriosclerosis. Some authorities have stated that 60 per cent. of arteriosclerotics are syphilitics. The evidence thus far obtained in our examinations at the Institute has not supported this contention. The death-rate among syphilitics, who have been thoroughly treated and supposedly cured and then accepted for life insurance, is nearly double that of insurance risks generally. Any widespread dissemination of syphilis throughout the population would mean a death-rate far higher than now obtains. I know of no evidence to support the view that syphilis is responsible for the *increasing* mortality from cardio-vascular-renal diseases. It has, of course, for many years been a serious menace that should be vigorously combated, but we must not accept the findings of work houses, dispensaries, hospitals and other institutions, where specially unfavorable groups are aggregated, as reflecting conditions in the great mass of the population.

Gonorrhea must not be forgotten as a frequent cause of focal infection, especially of the deep urethra and of the seminal vesicles.

The influence of the infective fevers such as typhoid, measles and scarlet fever in injuring the vital organs and tissues must also be recognized, but these forms of infection are decreasing and cannot be called in to explain the *encroachment* of degenerative disease.

We may summarize the rational measures that should be taken to combat the further encroachment of these cardio-vascular-renal diseases as follows:

First: Eugenics;

Second: Periodic physical examination;

Third: The practice of personal hygiene.

All available educational channels should be utilized to induce the public to employ these measures. I would lay special emphasis on over-nourishment, ill-balanced nourishment, excess of meat and highly stimulating foods, high tension living and mental strain, lack of exercise, excess of exercise, alcohol, tobacco, constipation and intestinal poisoning and focal infection, especially but not solely in the head, as the most important causes of chronic diseases that we have to fight.

Let us not be satisfied with the death-rate from heart disease, apoplexy and nephritis, any more than we have been satisfied with the death-rate from tuberculosis and typhoid. Let us not supinely consent to the theory that man cannot live beyond 95 because the insurance tables say so. Let us do our work unhampered by such preconceived limitations, and utilize every means that science can command to improve the human stock, not merely by lengthening life, but by adding to its meaning, its quality and its total value.

Discussion.

H. E. Mock, M. D.: Dr. Fisk and the Life Extension Institute are doing an admirable work, especially in educating the public along health lines including the better supervision of their bodies and the correction of conditions that may later on lead to disease.

We have all suspected that very few men are in perfect health, and Doctor Fisk's findings of 100 per cent. imperfect in 1,000 examinations proves our suspicions.

Industrial hygiene and prevention of disease and accident is one of the broadest specialties that has entered the field of medicine. It is such a new work that those of us engaged in it are still pioneering and are seeking for facts and results.

A number of large industries throughout the country in the last few years have installed their own health departments and are doing excellent work in industrial hygiene, prevention of accidents, examination of employees, and disease prevention. For six years I have been engaged in this work with an industry employing over 10,000 men. We have gone into the problems of examination of employees very thoroughly, and a comparison of our findings with those of Doctor Fisk will be of especial interest.

Out of 9,971 complete general examinations made last year, 2,585, or 25.9 per cent., showed definite diseased conditions, which could be classed as moderate to serious. Many had more than one diseased condition, however, which would run the total number of diseases found to a higher percentage. The percentages of these diseased conditions differ considerably from Doctor Fisk's findings. Thus, from a total of 9,971 examinations:

	Per cent.
Valvular heart disease	2.2
Myocarditis or functional heart disease	3.0
Total heart cases	5.2
Kidney disease—albumin and casts	2.5
Arteriosclerosis	3.1

making a total of combined urinary and circulatory conditions of 10.8 per cent.

These lower percentages may be accounted for to a certain extent by the fact that the average age of our examinations was 26 years; that 40

per cent. of those examined were girls; and that at least 60 per cent. were engaged in office or light work and had fairly good home surroundings.

Two weeks ago, Doctor Fisk visited me and explained his method of studying the radial pulse to ascertain hardened arteries. With my assistants, we have been following this procedure and have examined some 300 cases since then, with especial attention paid to this feature. We found that about one out of every three men and boys (or 33 per cent.) have palpable arteries; but only about 3 per cent. of the girls show this condition. Also, I have examined a number of my sick patients in the hospital, and found only a small number with palpable arteries. I have not had sufficient time to arrive at definite conclusions concerning this phenomenon, but am positive of these facts:

1. That boys and men engaged in more active work and exercise have more easily palpable arteries.

2. That girls in good health and with an artery that is easily felt show only a few cases of palpable artery when the blood stream is obliterated from the artery above and below.

3. That sick persons and those in a run-down condition show only a slight tendency to palpable arteries under the same conditions.

4. That frequently the artery is felt in the right wrist and not in the left, or vice versa.

These facts give rise to this thought: Is it not possible that active work and exercise give a certain tone to the arteries, comparable to the firm tone given to the muscles of the body under these conditions? And may this not be an indication up to a certain extent of good health, rather than a diseased condition? Furthermore, I would doubt the diagnosis of hardened arteries in the majority of these cases without a histological examination to prove such a condition.

Besides these circulatory diseases, we found many other diseased conditions, which correspond more closely with Dr. Fisk's findings:

	Per cent.
Lung findings	3.1
Tuberculosis	1.7
Acute or chronic tonsilitis	3.9
Anemia or chlorosis (by blood examination)	1.9
Diabetes	.06
Contagious diseases	.3
Venereal diseases—syphilis; gonorrhea (men only)	.6
Among 5,000 men examined, we found:	
Herniæ	3.2
Unprotected by truss	2.5
Varicocele, hydrocele, and undescended testicle	.5
Flatfoot	2.
Minor defects found in both men and girls:	
Defective vision	35.
Uncorrected defective vision	5.
Deafness	4.
Constipation	20.
Skin diseases	4.
Teeth—caries, pyorrhea, etc	93.
These examinations were made by a dentist, which accounts for the high percentage.	
Hypertrophied tonsils—not definitely diseased	48.

We have heard here the results of medical examination of employees as far as diseases found are concerned. How about the other results? Does this work actually pay the concerns doing it? Emphatically, it does; and here are some of the reasons:

1. Last year there was a 28 per cent. increase in the membership of our Mutual Benefit Association, as compared with three years ago. In spite of this increase, there was a decrease of 40 per cent. in the amount of sick disability.

2. Here are some of the ways in which it pays, the value of which cannot be estimated.

(a) The removal of the man with organic heart disease or kidney trouble or other chronic disease that has reduced his efficiency for his regular heavy work, and placing him in lighter work where he can again become efficient.

(b) The preventing of employment of badly diseased persons, who could never become efficient employees and who very likely could remain on the job only a very short time. Saved, for the management, the cost of employing them and the cost of teaching them their work—estimated by some to represent an average of $35.00 per person.

(c) The 20 per cent. decreased efficiency of the man with a rupture, and his increased efficiency after it is discovered and repaired.

3. In discovering tuberculosis alone it has paid this concern as follows:

(a) In six years we have prevented 217 active cases from being employed.

(b) Have discovered 249 cases among our employees and have taken care of them.

(c) 140 have been cured and are back at work from one month to five years.

It has been impossible to estimate the increased efficiency of the entire working force by ruling out these cases of tuberculosis and these sources of contamination.

Above all, the far-reaching, humanizing influence of this industrial hygiene work is beyond price. And, did you ever think of it—I believe such medical work as this is driving our country into the truest form of Socialism.

"Census of the Deaf and Dumb—1910."

Review by Louis I. Dublin, Metropolitan Life Insurance Company, New York, N. Y.

Under this title the Census Bureau has recently issued a preliminary bulletin giving the results of the first statistical study of deaf-mutism in this country. The tabulation covers in some detail 19,154 deaf-mutes who returned replies to the Bureau's special inquiry blank out of the total of 44,708 persons originally reported as deaf and dumb by the enumerators of the Thirteenth Census. These 19,154 cases are distributed by geographic divisions, by age and sex, race and nativity, marital condition, and age at which hearing was lost.

The most interesting table is the last, which shows the distribution according to age when hearing was lost. 11,613, or 60.6 per cent. of all the cases, were acquired rather than congenital cases of deafness and of this number 42.9 per cent. were acquired between the ages of one and three. This fact is significant, since it is at the earlier ages that children are most susceptible to measles, whooping cough and other diseases which often result in deafness.

From the figures given in the tables, one would infer that there was a preponderance of deaf-mutism among males, at all ages, among both white and colored, and among the native as well as the foreign born; the sex ratio for the deaf-mutes is 121.4 males to 100 females as compared with 106.0 in the total population. The age distribution of the deaf-mutes is also very different from that of the general population. This is especially marked at the ages under five, which comprise only 1.6 per cent. of the total number of deaf-mutes as against 11.7 per cent. in the population as a whole. The whites show a greater incidence of deaf-mutism than the colored; they form 94.1 per cent. of the defectives, although the whites comprise only 88.8 per cent. of the population. Similarly there is a preponderence of native born among the deaf-mutes; they form 89.9 per cent. of the total as against 83.7 per cent. in the population. Whether the above conclusions can properly be drawn depends entirely upon whether those who returned inquiry blanks are representative of all deaf-mutes. The question is especially pertinent in connection with the apparently greater incidence of deaf-mutism among the whites and the native born; for, in general, one would expect a proportionately larger number of returns from them than from the colored and the foreign born deaf-mutes.

The second and fuller report is awaited with interest. It will cover such points as deafness among relatives, facts about schooling, means of communication, occupation and earnings.

LOUIS I. DUBLIN.

COÖPERATION IN PUBLIC HEALTH ADMINISTRATION AT LASALLE, PERU AND OGLESBY, ILLINOIS.

GUSTAV F. RUEDIGER, M.D.,
Health Commissioner for LaSalle, Peru and Oglesby, LaSalle, Illinois.

Read before the American Public Health Association, Health Officers' Section, Jacksonville, Fla., Dec. 3, 1914.

COÖPERATION in public health administration is still in the experimental stage and to my knowledge only two experiments have been undertaken in this promising field. The first of these was carried out in Massachusetts about two years ago, under the leadership of Prof. Earl B. Phelps, and the second is the one about to be described from Illinois.* In the Massachusetts experiment eight communities agreed to cooperate, but four of them came in for milk and dairy inspection only. In our experiment we are serving only three cities but our central health department has entirely replaced the old boards of health in these cities. Another vital difference between this experiment and the one in Massachusetts arises out of the fact that ours is supported entirely by a private donation. The scope of the work also is somewhat different in that we aim to give ample time to the chief health officer and the bacteriologist for original research.

LaSalle, Peru and Oglesby are three small industrial communities located in north central Illinois. They have a joint population of approximately 28,000 people, most of whom are supported by common labor in three cement works, two zinc works, a clock factory, a plow factory and a number of coal mines. LaSalle and Peru are situated closely together and are separated only by a political line, whereas Oglesby is nearly five miles south of LaSalle. Transportation between LaSalle and Peru is greatly facilitated by a street car line giving a fifteen minute service, but Oglesby must be reached by automobile, and a small runabout is part of the equipment of the health department.

We have a very cosmopolitan population as the labor in these industries is furnished chiefly by Poles, Austrians, Lithuanians, Irish and Germans. Many of them are almost illiterate, or entirely so, in so far as our language is concerned. They know very little about sanitation, civic pride and civic cleanliness, and it is difficult to interest them in these matters. The housewives have no thought of doing wrong when they throw their dish water, wash water and other kitchen and table refuse out of the window or back door, and leave it there for nature, flies and rats to dispose of. They have always done this and feel that their personal liberties are being interfered with when they are asked to get a garbage can or to construct a closed drain to carry waste water to the nearest city sewer. Manure piles and insanitary open privies are to be found in every section of the community.

* Public Health Reports, 1914, 29, p. 2477.

There was hardly a single block in these three municipalities last spring that did not have its quota of them. Indeed some of the residents are strongly prejudiced against the use of a modern indoor toilet, believing that the odors produced generate disease.

LaSalle has for many years had a fairly good milk ordinance but the only thing that was done under it was to collect the ten dollars license fee for each wagon and to make a butter-fat test once a month. Peru and Oglesby have had no milk ordinance and none of the three health departments paid any attention to dairy inspection or to the bacteriological content of the milk sold. All milk sold in Peru and most of that sold in LaSalle was delivered in cans in an uncovered wagon, from which it was dipped with a dipper and transferred to the receptacle brought out into the street by the housewife.

Quarantine regulations were lax and difficult to enforce, and in a recent epidemic of smallpox many patients were kept concealed while others openly walked the streets in defiance of the regulations of the health department. Moreover, there was no isolation hospital to confine these patients and it often was very perplexing to the health officer to know what to do with them. Under these circumstances, which were most favorable for the spread of contagious diseases, smallpox, diphtheria and scarlet fever were very prevalent for many years, and often were epidemic.

This unsatisfactory state of affairs was clearly seen by many of our citizens but it was difficult to find a way out. It was evident that these three municipalities could not each support a modern health department with its various specialists. The old health departments did not seem to have the confidence of the people, had very little financial support, and nobody on their staffs with special training in public health work and therefore hesitated to undertake the necessary reforms. Finally Mr. F. W. Matthiessen, with the advice of his son-in-law, Dr. Philip S. Chancellor, made a proposition to establish a modern health department for LaSalle, Peru and Oglesby, with headquarters at LaSalle, and supported by a private donation from Mr. Matthiessen. After a conference with the present director the following plan of operation and organization was drawn up and submitted to each of the three city councils, in October, 1914, for acceptance: The plan provided for the establishment of a hygienic institute in LaSalle, under the general guidance of a director who was to be chosen by Mr. Matthiessen and Doctor Chancellor. At the institute were to be provided properly furnished offices with filing cases, desks, record cards and reference books, and a completely equipped laboratory for making bacteriologic diagnoses of infectious diseases and sanitary chemical and bacteriologic analyses of water and foods. The director of the hygienic institute was to be accepted by each of the three cities as their chief health officer or health commissioner; but in order to give this organization a legal standing it was necessary that the mayor and city council in each of the three cities should appoint an assistant health officer who is a resident of the

city in which he serves. This was essential because our state law requires that the city health officer shall be a resident of the city in which he serves.

In order to keep these appointments out of politics as much as possible the director of the institute is given the right of nomination of these appointees. It is understood that these assistant health officers shall work under the direction of the director of the institute, but we have no written agreement to the effect. This coöperation is secured, however, by virtue of the fact that they draw their salaries from the hygienic institute, the funds of which are controlled by its director. The director has a three years' contract with Mr. Matthiessen which gives him rather full control of the institute, and the city ordinance gives him full charge of the health department. He is empowered to select his staff of assistants which at present consists of a bacteriologist, a school nurse, an infant welfare nurse, a dairy inspector, a stenographer and book-keeper, a laboratory helper and the three assistant health officers just referred to. Everybody on this staff draws his salary from the fund given by Mr. Matthiessen.

Our plan provided further that each of the three municipalities shall engage a sanitary policeman, who is to work under the direction of the health commissioner, but shall be paid by the city. The cities were also to provide for the collection and disposal of garbage, and to adopt a more up-to-date sanitary code which would embody recommendations made by the director of the hygienic institute.

The three assistant health officers are medical practitioners and give only a part of their time to this work. They act in the capacity of medical inspectors and are virtually in charge of the contagious diseases in their respective districts. All contagious diseases are, however, reported to the central office and epidemiological investigations are conducted from that office.

The general plan outlined was accepted in October, 1913; the new ordinances were passed in April, 1914, and the new health department took charge on May 15, 1914.

In formulating our plan of organization of the hygienic institute and the coöperative health department, economy of operation was not the paramount consideration. The first thing sought after was efficiency in public health administration, but those who advanced the project were desirous that original research should also be provided for. We therefore aimed to have assistants enough to allow the director and the bacteriologist to devote considerable time to this important side of the work. Mr. Matthiessen's donation in support of this work was as follows: Twelve thousand dollars for a suitable building for offices and laboratory, five thousand dollars for laboratory equipment and office fixtures, and sixteen thousand three hundred and fifty dollars, annually, for salaries and maintenance.

When we started the work last spring we centered our efforts on the insanitary condition of the alleys and on the milk supply. We found that most people threw all kitchen refuse and other waste into the alleys. Some

used old wooden boxes or barrels and a few (not over 25 families) had covered, water-tight garbage cans. Stable manure was thrown anywhere in the alleys or on vacant corners of lots. These conditions were considerably improved, but not without a number of legal battles. There still are a great many uncovered garbage cans in the city, and many owners of horses have not yet provided a covered box for holding the manure. All grocery stores, meat markets and restaurants are being systematically inspected and scored and the schoolhouses are visited daily by either a school nurse, or one of the assistant health commissioners. All dairies have been inspected and scored and the dairy cows will soon be tested for tuberculosis. The milk delivered in the cities is subjected to bacteriological and chemical analysis several times a month. In LaSalle all milk is now delivered in sterilized bottles but in Peru the greater part of it is still dipped from cans in open wagons, in the streets. Permanent records are being kept of all contagious diseases, births and deaths for the first time in the history of these municipalities. The open privies are slowly being wiped out but most of these improvements are meeting with intense opposition. We hope, however, that the greater part of this opposition will cease in time as it will soon become apparent that these improvements are for the good of everybody. Industrial hygiene is part of our program but thus far it has been impossible to give any time to this part of the work.

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RATIONALITY IN THE CONTROL OF MEASLES.

In its broadest aspect the progress of sanitation is a constant warfare, not only against the causes of disease, but also against the intrenchments which they have occupied in our own territory of tradition. The discovery and use of new and better weapons has resulted, it is true, in the regaining and refortifying of much of that territory, especially in the conspicuous major regions of attack. But, at the same time, better information and strategy point out the necessity for activity in certain fields formerly little considered. Take, for example, measles, classed conventionally as a "minor contagious disease." Regarded with indifference or contempt, its visitation has traditionally been accepted by parents as an incident of childhood almost as common and unavoidable as teething. Doctors, too, have shared this attitude. Health officials, seeing attempts at control by ordinary methods swamped in periodical epidemics, have either abandoned the matter to simple *laissez-faire* or dismissed it with arbitrary routine regulations—perhaps with some educational publicity.

But the warning voice of the statistician has been heard, indicting measles (with its congener whooping cough) as an arrant mischief-maker and mortality-producer. The United States Census mortality statistics, for example, show that measles, the "minor" communicable disease, ranks in mortality with scarlet fever of the "major" group. In communities where diphtheria is under the best control it may even vie with that disease. The figures for the Registration Area indicate that on the average there are, in the whole United States, not far from 10,000 deaths a year ascribed to measles, not to speak of untabulated effects of a morbidity of unnumbered cases.

Despite the frequent occurrence of epidemics of measles it is significant of pessimism that few attempts have been made to secure from them data on which

to base measures of control. Now, however, there comes to hand a thorough study of an epidemic of 254 cases at Palo Alto, California, by the health officer of that city, Mr. H. F. Gray, which again raises, and, furthermore, greatly assists in clarifying the whole matter. The data secured, together with reference to existing experimental data and regulations, are set forth in a paper, appearing in the recent November number of the *Journal of Infectious Diseases*, which merits the close consideration of every health officer. The affirmation, in this paper, of the value of isolation; the fresh data on periods of incubation and infectivity; the advocacy of a just, scientifically determined duration of quarantine; and the description of a method of attack, through the definite coöperation of parents and school-teachers, on the difficult problem of early recognition of the disease: are all points of prime importance. To attempt to summarize further here would be to distract attention from the significant details of the study itself. Its sum total in effect is the conclusion that definite rational measures are possible in the control, even though partial, of a disease which has too commonly and too long been regarded as an insoluble if not a negligible public health problem.

PELLAGRA.

From earliest times in the history of pellagra, diet has been held to play an important rôle in the disease. The dietary theories have been numerous and varied and have for the most part concerned themselves with corn. The best known of these is the spoiled maize theory of Lombroso which forms the basis of the Italian government's efforts to eradicate the disease. In this country, this as well as other food theories have found but small favor. Indeed, until within about a year, the trend of American opinion was strongly in favor of the view that pellagra is an infectious disease. The investigations of the Public Health Service during the past year would seem to make this view almost if not quite wholly untenable; they present a dietary conception of the disease that seems strikingly analogous to that of beriberi.

In accordance with his epidemiologic findings in 1914,* Goldberger suggested that it might be well to attempt to prevent the disease by providing those subject to pellagra with a diet such as that enjoyed by well-to-do people, who as a class are practically free from the disease, in other words to modify the diet, of the group or class affected, by reducing the proportion of the cereals, vegetables and canned foods and increasing that of the fresh animal foods, such as fresh meats, eggs and milk, in their diet.

A test of the preventive value of diet based on this proposal has been carried on for a year at two orphanages in Mississippi and at the Georgia State Sanitarium. Goldberger, Waring and Willets summarize their report† of this work as follows:

1. The diet at two orphanages, "M. J." and "B. J.," for several years endemic foci of pellagra, was modified in accordance with the directions of the writers in September, 1914. Hygienic and sanitary conditions have remained unchanged.

2. The modification in the diet consisted principally of a marked increase in the fresh animal and the leguminous protein foods.

3. Since the change in diet at orphanage "M. J.," there has not been observed any recognizable evidence of a recurrence in any of the pellagrins of 1914, 67 of whom remained under observation until they had completed at least the anni-

* U. S. Public Health Reports, Oct. 23, 1914.
† U. S. Public Health Reports, Oct. 22, 1915.

versary date of their attacks; nor have any new cases been observed among the non-pellagrin residents of 1914, 99 of whom have been under observation for not less than a year.

4. Since the change in diet at orphanage "B. J.," there has been observed this year but a single individual with recognizable evidence of a recurrence among the pellagrins of 1914, 105 of whom remained under observation until they had completed at least the anniversary date of their attacks; nor has any new case been observed among the non-pellagrin residents, 69 of whom have been under observation not less than a year.

5. At the Georgia State Sanitarium, an endemic focus of pellagra, a ward of pellagrins in the colored female service and one in the white female service was organized in October and December, 1914, respectively, for a test of diet in the prevention of pellagra.

6. The diet in these wards was modified on the same principle as that at the orphanages. The institution routine and the hygienic and sanitary conditions have remained unchanged.

7. Since the change in diet and up to October 1, 1915, there has not been observed this year any recognizable evidence of a recurrence in any of the pellagrins in these wards, 72 of whom (36 colored and 36 white females) have remained continuously under observation throughout this period or at least until the completion of the anniversary date of their 1914 attacks.

8. During the corresponding period of observation not less than 15 (47 per cent.) of 32 control female pellagrins have presented recurrences.

The conclusion drawn by these workers is that pellagra may be prevented by an appropriate diet without any alteration in the environment, hygienic or sanitary. This marks a notable sanitary advance; an advance as great or greater than that made by Takaki in his work on beriberi in the Japanese navy.

Significant as this work is with regard to the nature of the disease, additional and practically conclusive light is thrown on this phase of the subject by the results of an experiment recently reported by Goldberger and Wheeler. These workers placed eleven convict volunteers on a restricted, one-sided diet consisting of cereals (wheat, corn, rice), sugar, cane syrup, sweet potatoes, pork fat and greens. After five to six months of this diet, at least six of the eleven volunteers, all healthy white males, developed pellagra.*

At the isolated convict camp in Mississippi where this experiment was carried out, no pellagra had previously occurred nor did any of the other (control) convicts, averaging 70 to 80 in number, nor any of the free persons resident at this camp show any suspicion of the disease. The conclusion to which Goldberger and Wheeler are led is that pellagra has been caused in at least 6 of 11 volunteers as the result of the restricted diet on which they subsisted.

These distinctly epoch-making studies give the sanitarian a scientific basis for a rational attack on what within a few years has become one of the most important causes of morbidity and mortality in many of the states. In view of the manifest advantage of a wholesome diet as shown by these experiments, it would seem that any physician having to treat cases of pellagra in his practice should be able practically and at once to put these conclusions to the test.

J. W. K.

* U. S. Public Health Reports, Nov. 12, 1915.

George Miller Sternberg, M. D., LL. D.

An Appreciation.

SURGEON-GENERAL STERNBERG, retired, died at an early hour on November 3, 1915, at his residence in Washington, D. C. He was born June 8, 1838, at Hartwick Seminary, Otsego County, New York. His father, the Reverend Levi Sternberg, a Lutheran clergyman, and for many years principal of Hartwick Seminary, was a descendent of Nicholas Sternberg, one of the early German settlers (1703) from the Palatinate. His mother, Margaret Levering (Miller) Sternberg, was the eldest daughter of Reverend George B. Miller, D. D., for many years professor of Theology in Hartwick Seminary.

George M. Sternberg was the oldest of a family of ten children and received his early education at Hartwick Seminary. At the age of sixteen he commenced teaching school at New Germantown, N. J., and became self-supporting. Having decided to study medicine, at the age of nineteen he entered the office of Dr. Horace Lathrop of Cooperstown, N. Y., and subsequently attended the College of Physicians and Surgeons, New York, from which institution he graduated in the class of 1860, and commenced the practice of medicine in Elizabeth City, N. J.

At the outbreak of the Civil War, Doctor Sternberg passed the examination for the Medical Corps in a class of twenty-one, and was appointed Assistant Surgeon, U. S. Army, May 28, 1861. He was present at the first battle of Bull Run and received official commendation from Brigadier-General George Sykes for his services in the earlier battles of Gaines's Mill, Turkey Bridge, Malvern Hill, and also brevet commissions for faithful and meritorious services during the war. He also received the brevet commission of Lieutenant-Colonel "for gallant service in performance of his professional duty under fire in action against Indians at Clearwater, Idaho, July 12, 1877."

It is a fact worthy of note that Doctor Sternberg has seen more active service on the battlefield and in Indian campaigns, than any other medical officer with whose records we are familiar. Nor do the official records disclose the name of a single medical officer, who has faced as often and courageously the danger of cholera and yellow fever epidemics. During the cholera epidemic at Fort Harker, Kansas, in 1867, he lost a beloved wife, and, by a strange coincidence, he was also the post surgeon when yellow fever gained a foothold among the troops at Fort Columbus, New York Harbor, in 1871.

Having witnessed the devastating effects of these hydra-headed diseases and realizing that medical science had not yet discovered the real cause of these scourges, it was perfectly natural that a man of Doctor Sternberg's sympathetic nature and truly scientific spirit should have determined to devote his life to the study of these mysteries.

As a result of his experience at Governors Island, he was ordered to the yellow fever zone in 1872, and served at New Orleans and Fort Barancas, Florida where his wife courageously accompanied him. At the latter post he passed through two epidemics of yellow fever in 1873 and 1875. During the latter epidemic he suffered, himself, a severe attack. His first publication of scientific value related to the clinical history of yellow fever as observed by him during these outbreaks. In 1876 he was ordered to the Pacific Coast and in the following year he was engaged and distinguished himself in an active campaign against the Nez Percés Indians. It was the good fortune of the writer of this biography to meet Doctor Sternberg for the first time in the fall of 1877 at Fort Walla Walla, and the impressions then created as to the studious habits and critical character of Doctor Sternberg's mind have never been effaced. In addition to his duties as post surgeon he was then mastering the French language and was deeply interested in the germ theory of disease.

In 1878, while stationed at the same post, he began his experiments to determine the practical value of disinfectants, using putrefactive bacteria as the test of germicidal activity. These experiments were subsequently continued in Washington, D. C., and in the laboratories of the Johns Hopkins University, under the auspices of the American Public Health Association, as chairman of a committee appointed

and given an appropriation for the purpose of making such investigations. The results of the investigations were published in full in the Transactions of the American Public Health Association in 1888, but had won for him the "Lomb prize" as early as 1886. This prize essay, published in 1886, and revised by Doctor Sternberg in 1899, has been translated into several foreign languages, and practical measures of disinfection in this country and abroad are largely based upon the results obtained in these investigations. It may be truly said that scientific disinfection had its inception with the labors of Koch and Sternberg.

No one unless familiar with bacteriological work can have the slightest conception of the magnitude and painstaking labors involved in the determination of the "thermal death point of pathogenic organisms and the germicidal value of certain chemical and physical agents." It meant daily and exacting application extending over a period of years, but it was glorious work in the battle against infectious diseases. The eradication of preventable diseases is the highest aim of scientific medicine today, and in this field Doctor Sternberg was one of the foundation builders.

Doctor Sternberg's labors were not limited to this special field, for in the interval we find him active in other research work. In 1880 he discovered the micrococcus now recognized as the specific cause of croupous pneumonia and demonstrated the fact that it is found as a saprophyte in the buccal secretions of the mouths of perfectly healthy individuals. Later (1885) he demonstrated the fact that the micrococcus of sputum septicemia—his micrococcus Pasteuri—is identical with the capsulated micrococcus found in the rusty sputum of patients with croupous pneumonia. While it has fallen to the lot of Fränkel to share the credit of this important discovery, there can be no question that Doctor Sternberg first recognized and described the organism, although he did not associate it in his first publication with pneumonia, as he found it in his own and the buccal secretions of other healthy subjects. His work on sputum septicemia also for the first time explained the virulent character assumed in many instances by the bites of human beings.

In 1881, while stationed at Fort Mason, California, he demonstrated and photographed probably for the first time in America the tubercle bacillus, which had been discovered by Koch in 1881.

In the same year he demonstrated that the so-called "bacillus malariæ" of Klebs and Tomasi Crudelli was not an etiological factor in the production of malaria, which served to concentrate attention upon Laveran's plasmodium discovered in 1880, and it was finally proved by the work of Manson and Ross that the mosquito was the intermediate host of the malarial parasite. It was also Doctor Sternberg's good fortune, in 1885, upon his return from the International Sanitary Conference in Rome, to demonstrate for the first time in this country the plasmodium of Laveran in freshly drawn blood from a malarial patient. This demonstration was made in the pathological laboratory of the Johns Hopkins University and the amæboid movements of the plasmodium in the interior of the red blood corpuscles were plainly visible.

In 1886 he introduced the bacillus of typhoid fever to the medical profession in this country, in a paper read before the Association of American Physicians.

Doctor Sternberg's investigation with reference to the etiology of yellow fever date back to 1871, although his search for the specific organism commenced in Havana, in 1879, while a member of the Havana Yellow Fever Commission, and was continued for about ten years. During this time he twice returned to Havana during the months of yellow fever prevalence, and visited Rio de Janiero and Vera Cruz, also the town of Decatur, Alabama, during the epidemic of 1888. His report, published at the conclusion of these extended investigations, shows that all researches made to that date had failed to demonstrate the specific cause of yellow fever. He showed that the generally accepted claims of Domingos Freire, of Brazil, to have discovered the germ of this disease—his "cryptococcus xanthogenicus"—and a method of producing immunity by inoculations had no scientific foundation. He also showed that the bacillus of Gibier, the "micrococcus tetragenus" of Finlay, and various microörganisms encountered by himself and by other investigators bore no etiological relation to the disease. At the International Medical Congress, held at Berlin in August, 1890, the writer translated

Doctor Sternberg's letter to Professor Hirsch, giving a synopsis of his work and stating that so far the specific organism of yellow fever had not been discovered. It certainly speaks well for his painstaking work that even now, when we know that the infectious agent is transmitted through the sting of a mosquito, and the search has narrowed down to the body of this insect, it has not been isolated and neither he nor others have found it, probably because it is ultramicroscopic.

Having exhausted the resources at his command in his search for the germ of yellow fever by microscopical examination of the blood and tissues, by culture methods and by experiments on the lower animals, he felt that the only method left which offered any promise of success was that of direct experiment on man. If the blood of a yellow fever patient contained the specific infectious agent, this should be shown by inoculating a non-immune individual with such blood.

This line of research was pointed out by Surgeon-General Sternberg to Major Walter Reed, chairman of the Yellow Fever Commission in 1900, as was also the probability that it would ultimately be found that the disease is transmitted from man to man by an intermediate host.

In justice to all concerned, it should be remembered that when this commission was organized by General Sternberg, the claim of the distinguished bacteriologist Sanarelli to have demonstrated the etiological relation of his "bacillus icteroides" was generally accepted, and had been recently confirmed by two medical officers of the Public Health and Marine Hospital Service sent to Cuba for the special purpose of investigating this claim. To General Sternberg it appeared impossible that a bacillus, which is easily demonstrated under the microscope and which grows in ordinary culture media, could have escaped his observation during his extended researches, if it were in fact the specific cause of yellow fever. The only possibility such causal connection seemed to him to depend upon the identification of Sanarelli's bacillus as identical with a certain bacillus found by Sternberg in a limited number of cases during his researches in Havana. A comparison of cultures of the two microörganisms made by Major Reed at the Army Medical Museum, 1899–1900, showed that they were not identical and General Sternberg, being satisfied that Sanarelli's bacillus was not concerned in the etiology of yellow fever, organized in 1900 the Yellow Fever Commission, with Major Reed as chairman. Major Reed's investigation resulted in the demonstration that in yellow fever the specific infectious agent is present in the blood of those suffering from the disease and that the usual and probably only method of transmission of the disease is through the bites of mosquitoes of the genus Stegomyia. This brilliant demonstration by Reed and his colleagues has furnished the necessary basis for preventive measures, which have been applied with entire success in the yellow fever zone, and the practical results are of incalculable value to mankind.

The writer does not consider it unfair to the memory of Major Reed and his colleagues when he declares that much of the success achieved was rendered possible by the preliminary work of Doctor Sternberg, who had eliminated numerous errors committed by others and had contested and overthrown the claims of several bacteriologists for the discovery of the specific organism. His conviction that all former claims were unfounded, or remained to be proven, is clearly evinced by the appointment of a commission which he personally selected.

It may be truly said that no history of this important discovery is complete, without a just presentation of Sternberg's preliminary work. In giving due credit to all the participants of this splendid piece of research, it must be remembered that all of this work was of the highest scientific value, and his daily contact with the sick, his autopsies and bacteriological investigations in different countries and climes, in search of the yellow fever organism, involved at least the same risks and heroism displayed by members of the Yellow Fever Commission.

Doctor Sternberg was the pioneer in this country, not only in bacteriological investigations, but in the publication of bacteriological text-books. In 1880 he translated the work of Dr. Antoine Magnin from the French. In 1884 this work was greatly enlarged and brought up to date (480 pp., 8 vo., including 152 pp. from Magnin's work).

In 1892 Sternberg's Manual of Bacteriology was published (898 pp., royal 8 vo., illustrated by numerous photographs and cuts). In 1896

this work was revised and published under the title of a Text-Book of Bacteriology.

Doctor Sternberg since 1880 has been in the habit of illustrating his published works and scientific papers by photomicrographs made by himself. He has shown himself a master in this difficult art, and in 1884 published a volume on photomicrographs and how to make them (204 pp., 8 vo.). Other published works of Sternberg are Malaria and Malarial Diseases (329 pp., 8vo., Wm. Wood & Co., N. Y.), Immunity, Protective Inoculation in Infectious Diseases and Serum Therapy (325 pp., Wm. Wood & Co., N. Y., 1895), Infection and Immunity, with Special Reference to the Prevention of Infectious Diseases (203 pp., Putnam's Sons, 1903), making in all 2,592 pages, not to mention his chapters in text-books and medical encyclopedias and over sixty other contributions to medical and scientific literature, many of which have been translated into foreign languages.

Doctor Sternberg was appointed Surgeon-General U. S. Army, May 28, 1893, and was retired for age June 8, 1902. As Surgeon-General of the Army he established the Army Medical School and encouraged medical officers to engage in scientific researches by establishing laborntories and furnishing necessary apparatus at all the larger post hospitals. He also provided all new hospitals with well-equipped operating rooms, and directed medical officers to operate for hernia, varicocele, etc., instead of discharging soldiers having disabilities curable by surgical procedures, to become life pensioners upon the government. He established the Army Tuberculosis Hospital at Fort Bayard, New Mexico. On April 25, 1898, four days after the declaration of the Spanish American War, he issued a circular calling attention to the danger from typhoid fever in the camps, the rôle of flies in the propagation of this disease, and the importance of camp sanitation. Had this note of warning been heeded, the disgraceful typhoid rates incident to unsanitary conditions of our military camps would not have been observed. He organized the "Typhoid Fever Board," with Major Walter Reed as chairman and Dr. Edward O. Shakespeare of Philadelphia, and Dr. Victor C. Vaughan, of Michigan, as members. Upon his recommendation the last-named gentlemen were commissioned as surgeons of volunteers in order that they might serve upon this board. He organized the Yellow Fever Commission of 1900 with Major Walter Reed as chairman and Doctors Carroll, Lazear and Agramonte as members.

During the Spanish American War he established general hospitals at Key West, Fla., Savannah, Ga., Fort Thomas, Ky., Fort McPherson, Ga., Fort Munroe, Va., Fort Myer, Va., Washington Barracks, D. C., and San Francisco, Cal. Two hospital ships—the *Relief* and the *Missouri*—were purchased and equipped upon his recommendation; a fully equipped hospital train was kept in service as long as required. All surgeons of volunteers and contract surgeons, with a few exceptions, were appointed upon his recommendation. He organized the female nurse corps and the corps of dental surgeons in compliance with acts of Congress which had been passed in accordance with his recommendations. He recommended a large increase in the Medical Department to correspond with the increase in the army made in 1901.

General Sternberg's brilliant services to the nation have never been adequately rewarded, but Doctor Sternberg's unceasing study, honesty and truth have gained for him recognition in the educational and scientific world.

Membership and honors in medical and scientific societies—member and ex-president of the American Public Health Association; member and ex-president of the American Medical Association; member and ex-president of the Association of Military Surgeons U. S.; member and ex-president of the Philosophical Society of Washington; member and ex-president of the Biological Society of Washington; member and ex-president of the Cosmos Club of Washington; member and president of "The President's Homes Commission" (1907); honorary member of the American Association of Physicians and three local medical societies; honorary member of the Association of American Medical Colleges; fellow of the New York Academy of Medicine; president of section of military medicine and surgery of the Pan American Medical Congress; late fellow, by courtesy, in Johns Hopkins University (1885–90); honorary member of the Epidemiological Society of London; honorary member of the Academy of Medicine of Rio de Janeiro; honorary member of the American Academy of Medicine; honorary member of the French Society of Hygiene. The LL. D. degree

was conferred upon General Sternberg in 1894 by the University of Michigan, and in 1897 by Brown University.

This sketch will not be complete without a brief reference to General Sternberg's service as a citizen of the national capital. His activities were varied and his work unceasing as shown by the following list.

President and a founder of the Washington Sanitary Improvement Company; president and a founder of the Washington Sanitary Housing Company; president of the President's Homes Commission; president of the Citizens Relief Association; president of the Washington Sanatorium Company and director of Starmont Sanatorium; chairman of Committeee on the Prevention of Tuberculosis and president of the Association when organized as such; member of Committee on International Tuberculosis Congress; president Board of Directors of Garfield Hospital; president Board of Visitors of St. Elizabeth Hospital; professor of Preventive Medicine in the Faculty of Graduate Studies of George Washington University.

Among the most beneficient of his activities may be mentioned the two housing companies of which he was one of the founders and the president from date of organization until the time of his death. The object of these companies is the erection of sanitary homes at reasonable rentals. It must have been a pleasing reflection in the evening of his life to realize that he played the leading part in providing clean, decent and healthful homes to over 808 families of moderate means. These deeds and the foundation of Starmont Sanatorium, together with the fruits secured by his leadership in the tuberculosis movement, will always remain monuments to his useful and self-sacrificing career.

In this glorious service to humanity, which claims the heart, mind and hand alike and where, alas, ingratitude is often the only recompense, Doctor Sternberg had but two beacon lights to guide him, his conscience and the example of the Great Physician. Hence what a gratification to receive upon the evening of life evidence of approval of work well done. On June 8, 1908, a distinguished body representing the army and navy, the learned professions, statesmen, social workers and citizens of the city of Washington tendered Doctor Sternberg a complimentary dinner in honor of his seventieth birthday. On November 5, 1915 his remains were buried with military honors and a large concourse of representative people of the national capital paid their last tribute to a brave medical officer, a productive scientist, philanthropist and a model citizen. Surely the world is better for having known him.

GEORGE M. KOBER.

THE REGISTRATION OF COMMUNICABLE DISEASES WITH SPECIAL REFERENCE TO THE OUT OF TOWN CASE.

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Read before the American Public Health Association, Jackson ville, Fla., December 1, 1914.

THE reason for requiring physicians to report cases of communicable diseases to the health authorities is first of all to locate the presence of an infectious agent. When the enemy is located, measures for suppression may be adopted. If the location is not known, an extensive, expensive and often fruitless campaign may be carried on. It is therefore of great importance that all cases should be reported promptly to the health authorities.

Next in importance to knowing where an infectious agent is located is to know whence it came. The source of an epidemic may be thus determined. And, quite as important as caring for the patient, is the breaking of the chain of infection which otherwise might assume large proportions.

When the immediate treatment of a situation is accomplished there is another use of the information which is very valuable, and which, if accurate, may be of considerable service not only to the local officials, but to sanitarians in general. We refer to the number of cases appearing in a community as an index of the healthfulness of the locality, or as a means by which the local health authorities may show justification for funds expended. The case incidence may show the results of a particular activity.

From a statistical point of view the method of charging a municipality with the diseases reported in it by a group of conscientious physicians is not fair to the municipality. The faults in the system may be enumerated as follows: First, cases which were infected elsewhere are charged against a municipality because the patient happened to become ill in it. The disease having been contracted elsewhere, the local health authorities were in no way responsible for it. If they had been particularly active in eradicating this particular disease, its presence would tend to vitiate the good record that they had made, so that—Second, the case rate for a municipality may be misleading in regard to the efficiency of the health administration. Third, the sources of infection may be concealed.

Let us consider the following examples:

A. A man ill with typhoid fever at his home in the country is carried early in the course of the disease to a hospital in the city. Should the case be reported to the State Department by the city health officer or the local town health officer?

B. A women goes from her home to a community in the woods for her health. The diagnosis of tuberculosis is made at the latter place. Should the case be reported from the village in the woods, or should her home city be charged with the case?

C. A woman with tuberculosis has been reported to the State Department by the health officer of her town. Subsequently she goes to the woods. The health officer of the community in the woods reports the case, according to law. The case is thereby reported twice. Which record should stand?

D. A traveling salesman or actor becomes ill with scarlet fever in a town. He has just visited a series of places. What place should be charged with the case?

E. A country child visiting in a neighboring city unwittingly becomes exposed to whooping-cough. After it returns home symptoms of the disease become manifest. Shall the case be charged to the city or country municipality?

F. An almshouse is located in the country. The city poor are sent to live at the almshouse. The diagnosis of syphilis is subsequently made on an inmate. Shall the record of syphilis be carried by the town or city?

In deciding where a case should be properly charged, it is of the utmost importance that the source of the infection receive attention. The following two rules are therefore offered: *First, a case shall be charged against that town whence the infection was obtained. If the instance of exposure is not known, the visit must be consistent with the incubation period of the disease. The health officer of the municipality must be notified and agree that the exposure was possible. Second, when the municipality in which the infection occurred is not known, it must be charged to the municipality from which it is reported.*

If these two rules are applied to the above mentioned cases the result will be as follows:

A. The man ill with typhoid fever at his home in the country and carried early in the course of the disease to a hospital in the city will be charged to the home town. Rule 1.

B. The woman who went for her health to live in a community in the woods, and who subsequently was reported as having tuberculosis will be reported from "the woods" but the case will be charged against her home town. Rule 1.

C. The woman affected with tuberculosis which was reported and who subsequently moved to another place and was reported again will have her case charged against her first home town. Rule 1. (The second town officials are not responsible for the infection, but are responsible for permitting it to spread.)

D. The salesman who succumbed to scarlet fever after having visited a number of places, none of which he was able to identify as the source of infection, will have his case charged against the town in which he became ill. Rule 2.

E. The child exposed to whooping-cough in the city but coming down with the disease at her home in the country will be a case which should be charged to the city. Rule 1.

F. The patient at the almshouse located in the country, who had contracted syphilis in the city and came to the institution from the city, is a case which should be charged against the city. Rule 1.

The mechanism by which cases can be charged against the proper municipality consists of two parts: First, the use of a transfer report card, and second, the occasional decision of a member of the Division of Communicable Diseases in the State Department of Health. The transfer report card is prepared as follows: A card 6 inches long and 7 inches wide is perforated along the middle line, thus dividing it into two parts, each of which is 6 x 3½ inches. The upper card has a form printed on it as follows:

TRANSFER CASE REPORT CARD.

PART I.

Date ————

THE COMMISSIONER, STATE DEPARTMENT OF HEALTH, ALBANY, N. Y.

Dear Sir: A case ———— name of patient ———— age — local address ———— has been reported to this office. It is believed that the case was infected at ———— about, date ———— The transfer report card has been forwarded to the health officer of Kinderhook.

Very truly yours,

———— M. D.,

Health Officer of ———— *Dist. No.* ————

Address ————

detach here

TRANSFER CASE REPORT CARD.

PART II.

Date ————

HEALTH OFFICER OF ———— COUNTY, N. Y.

Dear Sir: A case of ———— name of patient ———— age — address ———— occupation ———— date of onset ———— was reported to this Department on ———— date. It is believed that the infection was obtained in your municipality. The case is reported to the State Department of Health and is charged against your municipality. Very truly yours,

———— M. D.,

Health Officer of ———— *Dist. No.* ————

Address ————

(A health officer receiving this card, if he is satisfied that the matter herein contained is probably true, must record the case in his record. It need not be reported to the State Department of Health. But if he disagrees, he shall fill out the blank on the back of this card and mail at once to the State Department of Health. If his reasons are just, the card will be returned to the original sender.)

PROTEST BLANK.

THE COMMISSIONER, STATE DEPARTMENT OF HEALTH, ALBANY, N. Y.

Dear Sir: I protest the referring of the above mentioned case to this municipality for the following reasons:————————

————————

————————

————————M. D.,

Health Officer of————*Dist. No.*——

Address————

(If the health officer fills out this protest blank, he need not record it on his books unless it is returned to him by the State Department of Health, stating that the reason is insufficient. If the reason is deemed insufficient by the State Department of Health, the card will be returned to the health officer making out the card originally, stating that case cannot be charged to above mentioned municipality. It will then be charged to the municipality in which the case was discovered.)

Rule 1. A case shall be charged against that municipality whence the infection was obtained; if the incident of exposure is not known, the visit must be consistent with the incubation period of the disease; and the health officer of the municipality must agree that the exposure was possible.

Rule 2. When the municipality in which the infection occurred is not known, the case must be charged to the municipality from which it is reported.

The State Department of Health, through its Division of Communicable Diseases and, if necessary, the sanitary supervisor, decides upon the merits of protested cases only. The justifiable transfer cases take their rightful place against the municipality from which the source of infection occurred.

The advantages of the system are the following:

1st. Foci of infection will be more evident by the case incident rate.

2d. Health officers of municipalities where great effort and money has been expended to secure good sanitary conditions will be able to present a more comparable figure.

Aggressive health officers will be better able to show the result of their work.

3d. A stimulus will be given to tracing the source of infection.

4th. Rural and urban case rates will be more comparable.

The objections to the system are the following:

1st. One extra card for the health officer must be kept track of. The number of report cards can be reduced and a card adopted which corresponds more nearly to the card suggested by the committee that prepared the model state law for morbidity reports, so that the extra card will not be a burden.

2d. It will not be generally used. It will probably be used only by the aggressive health officers. They are the kind that should be assisted; the inactive health officers should not be encouraged to be less efficient.

3d. Border municipalities will not in some instances be able to transfer the cases that come from other states. Special provisions might be made to have these cases referred to the State Department, acknowledgment of which could be made.

4th. Case rates of different communities are like death-rates; not a good sanitary index, because corrections for age, sex, color, nationality, occupation, etc., are not made. Therefore, why try to repair a poor method?

It would seem that a poor method is better than none, and a poor method made a little better is a move in the right direction.

AN INVESTIGATION OF METHODS OF STORING AND DISPENSING MILK AND THE VALUE OF A PRACTICAL SCORING SYSTEM.

O. W. H. Mitchell, M. D., and G. E. Hannett,
Syracuse, N. Y.

SO MUCH has been said and done regarding the production, handling, and standardization of milk, the examination and care of dairy herds, that the importance of methods for dispensing milk in establishments outside the home has been largely overlooked. The enormous sale of milk in lunch rooms, hotels, restaurants, soda fountains and places of a similar nature, suggested to the writers that an investigation of storing and dispensing methods in these places might reveal conditions which should be remedied. The result of an investigation which was made in Syracuse is the reason for publishing this article.

During the summer and fall of 1914 inspections of 46 hotels, restaurants, lunch rooms and other places where milk is served were made. During the investigation special efforts were made to ascertain the methods used in storing and serving milk, to correct improper methods, and to formulate a practical scoring system for the rating of the methods employed in the storing and serving of milk.

The scoring system which has been used and is embodied in this report was made as simple as possible and the grading limited to what was considered the most important points in the storing and serving of milk, namely, the milk container, age of milk, refrigeration and care of the refrigerator. It would be easy to elaborate upon the system but to incorporate all of the things which suggest themselves would make a system too cumbersome and technical to be of practical value.

In the system employed the perfect score is 100. If a score is 80 or below there should arise a doubt as to whether the milk is being properly handled. In most instances a score of 75 is not acceptable. If the score is below 75 or an uncovered pail is used (even though an approved dipper is provided) there should be no hesitancy in refusing to allow milk to be served under such conditions. The scoring system is arranged so that credits given for the cleanliness of the refrigerator and the kinds of containers are variable. If a passing score is to result the credits for cleanliness of the refrigerator and kinds of containers must be high, or the score for one must be high if the other is low. A glance at the score will make the preceding statement clear.

Of the 46 places investigated the scoring resulted as follows:

Score	Number of places.	Per cent. of total number of places investigated.
100	5	10.86
95	12	26.08
90	5	10.86
85	3	6.52
80	14	30.43
75	5	10.86
Below 75	2	4.34

FAC-SIMILE OF SCORE CARD.

Name..... Day Number.....

Address..... File Number.....

Sample.....

Date and Hour..... Score.....

Milk containers.	Age of milk.	Refrigerator.	Care of refrigerator.
Bottled Milk (25) —	Not over one day after delivery (25) —	Temperature of 50°F. or below (25) —	Cleaned daily (25) —
Small-top pail and cover (15) —	Over (0) —	Over 50°F. (0) —	Often (20) —
Large top pail and cover (5) —			Occasionally (10) —
Approved dipper or equivalent (5) —			When needed (0) —
Uncovered containers (0) —			

Remarks—

Unsatisfactory or questionable scores were made by 7 places or about 15 per cent. of the places investigated and passing scores which were not highly satisfactory were made by 14 places or about 30 per cent. of the total investigated. Such a showing was considered good because little had been done previous to this investigation to improve the methods of storing and serving milk. The greatest courtesy was shown by proprietors, and they seemed very willing to adopt any reasonable suggestion offered.

Bottled Milk.—The number of places using bottled milk exclusively was 5. In the scoring system there is a difference of 5 points between the covered small-top pail with approved dipper and bottled milk. If the milk in bottles is not kept properly cooled, that is, if the bottles are frequently removed from the refrigerator and allowed to remain varying lengths of time in a warm room, the 5 points difference is not deserved. Of the places using bottled milk this practice was observed several times. Unless the bottle is shaken before the milk is poured out, the milk is apt not to be as uniform as dipped milk. Another practice which deserves some scrutiny is the serving of milk in bottles to customers. If the milk is obtained from the producer in bottles, the practice is to be encouraged but, as was observed in one instance, if the milk is bottled in the kitchen and served to the customer, the practice should not be permitted. Besides being a deception, the chances of contamination are increased by extra handling.

Milk in Regulation Milk Cans, Pails, Pitchers, etc.—Unquestionably the best method of handling and storing milk which is not kept in the original bottles is accomplished by the use of regulation milk cans supplied daily by the dealer. Next of value is a can of similar type which is kept at the place where milk is served and is cleaned daily. The chief objections to containers with spouts or faucets are that they are not infrequently poorly cleaned, and that the cream which collects on top is not mixed with the bulk of the milk so that some of the customers do not get value received.

The use of uncovered large or small-top pails, flaring top pails, pitchers, cans or jars is not to be recommended. It is very important that covers be kept on the cans to keep out dust, dirt, flies and other insects, particles of ice, small bits of various kinds of food and to keep the milk better refrigerated. During the busiest hours it is practically impossible to keep the cans covered, but there is no excuse for them being uncovered between rush times.

Use of Approved Dipper.—Milk should not be permitted to be served from containers other than the original bottle unless an approved dipper or some approved method is used to remove the milk from the can. By an approved dipper is meant a long-handled dipper which reaches within an inch or two of the bottom of the can and has a hooked handle which may be hung upon the side of the can. It is also very advisable that the dipper be free from cracks or crevices which easily collect dirt. The dipper is to be used as a mixer as well as a dipper.

During this inspection many substitutes for approved dippers have been found. They were in most instances short-handled dippers and various kinds of cups. By the latter methods the hand will frequently come in contact with the milk and besides such dippers cannot be used for mixing. The removal of the dipper from the can and leaving it on a table, hanging on a nail or rinsing in water are practices which should be stopped. As long as the dipper is clean and is not in use it should be left in the can. The dipper should be cleansed and sterilized daily.

Mixing of New and Old Milk.—At only one of the 46 places inspected was there an admission that milk of the day before had been mixed with the milk received on the day the inspection was made. Although apparently rarely practiced it should be called to the attention of proprietors that milk does not keep so long or have such a pleasant flavor when milk of different ages are mixed.

Collection of Dried Milk Above Cans. In order to save space the milk cans are not infrequently placed under counters or similar constructions so that projecting above the top of the can is the under surface of the counter or ledge. When the dipper is forcibly sent to the bottom of the can, milk is splashed on the under surface of the counter or ledge. Here it is often allowed to dry and sour. It will then scale off and drop back into the can when the cover is off. Such a condition causes a bad odor, gives rise to rapid souring and imparts a disagreeable taste to the milk.

Refrigeration.—The different kinds of ice-boxes, refrigerators, and coolers are so numerous that no attempt has been made to classify them. Any method which allows the temperature to rise over 50°F. or is uncleanly is not to be recommended. Keeping the bottles or cans surrounded with ice is undoubtedly the best method and rather easily accomplished. In all probability many of the so-called refrigerators in which the milk is kept in compartments a considerable distance from the ice frequently have a temperature over 50°F. It has been suggested that the expression "low temperature incubators" would be more appropriate for many refrigerators. In only one instance during this investigation was the temperature found unsatisfactory. Cleanliness of the refrigerator or cooler is very important in the storing of milk and in the method of scoring much emphasis has been placed upon this feature.

SUMMARY.

While the results of this investigation reveal no startling insanitary conditions, they are enough to warrant close inspection of the methods of storing and serving milk in public places. A scoring system, such as the one employed, is a convenient way for keeping the record of the different places and is an incentive for the proprietor to improve conditions. By making frequent investigations and calling attention to needed improvements the methods of storing and dispensing milk may be easily brought to the same high standing as the methods employed by producers and distributors of milk.

REPORT OF COMMITTEE ON STANDARD METHODS OF TESTING DISINFECTANTS.

EARLE B. PHELPS, *Chairman.*

Laboratory Section, American Public Health Association, Rochester, N. Y., September, 7, 1915.

AN INFORMAL meeting of the Committee was held in New York on March 17, 1915, which was attended also by representatives of various laboratories interested in the testing of disinfectants. A plan was outlined tentatively for a comparative test of the two principal methods of standardization, the Rideal-Walker and the Hygienic Laboratory methods, with certain variations in technique. This plan was submitted in writing to the full Committee, and was subsequently carried out. Two samples of disinfectant having coefficients of approximately 5 and 15 respectively, were distributed, together with a standard synthetic phenol and a standard Hopkin's typhoid.

The results of the investigations have been tabulated and analyzed and have shown the necessity for more work along this line. The Committee therefore asks to be reappointed to continue this work.

SOME OBSERVATIONS ON THE MILK SITUATION IN THE SOUTH.

B. L. Arms, M. D.,
Department of Preventive Medicine, State Medical College, Galveston, Texas.

Read before the Public Health Officials Section of the American Public Health Association, Jacksonville, Fla., December 2, 1914.

I HAVE purposely selected a title that would allow plenty of freedom, which would neither confine me to one phase of the situation nor necessitate taking up any particular part of the subject.

The essential cause of a difference between the conditions governing the situation in the South and in the North is the temperature. On the other hand, a great percentage of the milk is delivered within four to ten hours after production.

I have taken Galveston as a location and the counts in 1914 up to July 6, as these were all made by the city bacteriologist, consequently by identical methods. Those during the latter part of July and during August, being made during her absence, have been omitted.

The maximum temperature at Galveston during the year 1913 was 99 degrees, minimum 27 degrees, the average 68 degrees. For the first eight months of 1914 the temperature was:

TABLE I.

TEMPERATURE FIRST EIGHT MONTHS 1914.

	Maximum.	Minimum.	Mean.
Jan.	73	38	57
Feb.	73	27	52.8
Mar.	72	40	57.2
Apr.	76	44	66.7
May	82	62	74.6
June	94	73	82.3
July	94	74	83
Aug.	88	69	82.2

TABLE II.

TEMPERATURE RANGE FIRST EIGHT MONTHS 1914.

	Mean highest.	Mean lowest.	Greatest daily range.	Least daily range.
Jan.	62.4	51.5	24	4
Feb.	59.	46.6	27	3
Mar.	62.1	52.3	23	3
Apr.	70.9	62.5	16	4
May	78.1	71.1	14	3
June	86.7	77.9	17	6
July	87.5	78.6	18	4
Aug.	86.3	78.1	16	5

These figures as well as those on the humidity were furnished by the local forecaster, Mr. W. P. Stewart, to whom I wish to express my thanks. It will be noticed that the daily range must be, as a usual thing, very slight. During one eight-day period, last summer, the mercury at no time registered below 81°, the maximum for this period being 89°, the daily average being 84° on each of two days, 85° on five days, and 86° one day. In spite of this condition, there was practically no ice used on the delivery wagons. I saw none on any, although nearly all the dairymen use ice to cool the milk on the farm. Notwithstanding the climatic conditions, I am informed that there is but one city in Texas—San Antonio—that has a temperature regulation for the control of its milk supply.

The city of Galveston is situated at the eastern end of Galveston Island, which is about thirty miles long by one to three miles wide, and is separated from the mainland by Galveston Bay which varies in width from two to forty miles. The entire island is very flat and low. Following the disastrous storm of 1900, which was so destructive to both life and property, the great sea wall four miles long was built on the Gulf side to protect the city from future damage and the grade was raised to 17½ feet above mean low tide. This grade slopes very gently toward Galveston Bay on the north side of the city.

The island is connected with the mainland by a concrete causeway nearly two miles in length and sixteen feet above mean low tide. The mainland, for fifty miles inland, is low, very few localities being over fifty feet above sea level. Consequently much of the territory is not easily drained and there are many marshes. Under these conditions, of course the mean relative humidity is high. The figures for the first eight months of 1914 follow:

TABLE III.

HUMIDITY RANGE FIRST EIGHT MONTHS 1914.

	Range.	Days 80 or above.	
Jan.....	50–98	16	
Feb.....	52–98	16	
Mar.....	56–100	18	5 days 100
Apr.....	61–98	25	
May.....	57–96	24	
June.....	71–84	12	
July.....	74–89	21	
Aug.....	72–92	11	

About 35 per cent of the milk consumed in Galveston is produced on the island within a radius of nine miles of City Hall, the other 65 per cent. coming from the mainland, all of it within a radius of 25 miles. The milk from the mainland is shipped without ice and delivered twice a day, while that produced on the island is also delivered morning and afternoon.

Of nineteen dairies on the island, ten delivered a product averaging below 100,000 for the period under consideration, the number of samples examined from each dairy varying from 5 to 13; three more were below 120,000; two between 150,000 and 175,000; one average was 267,000 (11 samples), but had it not been for two high counts this would have been in the first class as the average of the other nine was 23,000; the next had an average of 665,000; the next had an average of 1,061,000 with but a single sample out of eight below 125,000, and the last was an average of 1,252,000 which was caused by two extremely high counts, as the remaining six samples averaged 26,000.

Of two distributors handling milk from the mainland, one had an average from six samples of 842,000. Six samples of this milk taken at the railway station on arrival, but on different dates, averaged 397,000. Thirteen samples from the other distributor of mainland milk averaged 1,317,000 on delivery, while 47 samples of this supply, exclusive of five which were designated as having innumerable bacteria, averaged 716,000 on arrival. These being the laboratory findings let us look for the causes.

An inspection of the dairies whose product shows a consistently low count reveals, as one would expect, clean stables, clean milk-rooms, and clean utensils, with attention paid to the cooling of the milk and the absence of flies.

At one of the dairies in this class we find that the dairyman is making use of an old stable, but it is kept scrupulously clean, the milk-room is clean and screened, and although there are no screens in the stable, there are absolutely no flies. At one dairy at the time of the writer's visit, it was found that the milk utensils were washed in a portion of the barn, separated from the stable by a short passageway, without doors, and the pails and strainers were literally covered with flies which may have shortly before been in the stable. All water for the washing process was heated in a kettle out of doors. At this place a detached milk-room was in process of construction.

At another dairy they were milking, and although there was a milk-room just outside the stable in a separate building, they were straining the milk in the stable just back of the cows. Needless to say, each of these dairies had a high bacterial average.

While I have not been able to visit the dairies on the mainland, I have the information from different sources but trustworthy ones, that they are, as the counts would indicate, in an insanitary condition.

The bacterial count should be used as an index of the manner of producing and handling milk, and when a high count is found the cause should be sought, as it indicates that there is a slip somewhere. An inspection will locate the trouble and a recount should be made to determine if it has been remedied. A combination of counts and inspection is of the greatest benefit to the producer as well as to the consumer, although some of the former do not so consider them.

That this is feasible has been demonstrated most conclusively at Richmond, Va., where the milk inspector is in close touch with the dairies, also in other cities to a more or less marked degree. Of course, in large cities, where the milk is obtained from a wide area it is not as easy, but still it is being successfully done.

If, after the cause is found, the dairyman refuses to rectify it, the proper course is to refuse to permit the milk to be sold. Recourse to this procedure has a very wholesome effect not only on that individual whose license is taken away but also on others, as no one desires to be even temporarily denied a market.

There should be a temperature regulation for the sale of milk, and with ice at thirty cents a hundred there is no excuse for not using it. A low temperature, as well as pasteurization, is not to be used as a substitute for cleanliness in production and handling, but as an aid in delivering a clean, wholesome product.

If milk is produced and handled under proper sanitary conditions and kept cold there is no reason why the milk problem should be greater in the South, or at least where ice can be procured at a reasonable price, and this

is the rule rather than the exception, than in the North, and there is the advantage of having the source of supply near the consumer.

As soon as the consumers take sufficient interest to know, from personal observation, the conditions under which their milk is produced, and insist on proper methods of handling, they will get a clean supply.

Discussion.

Dr. Chas. E. North (*New York*): I am surprised that the figures in Doctor Arms' paper indicate the milk supply to be in such a good condition in a city where the climate is somewhat warmer than in other parts of the country. I consider it to be another evidence of the fact that cleanliness will produce clean milk under almost any geographical condition. I think we are all rapidly coming to realize that the production of clean milk is not a difficult matter but an easy matter where there is a real, conscientious intention to be clean. I would like to supplement that thought just for a moment by citing from my experience some principles which I believe should be emphasized in the minds of all health officers on this milk question. First, I feel that the establishment of a bacteriological laboratory by every municipality for the testing of milk supplies is a primary essential in their control. Second, I believe the industry should be encouraged to establish their own laboratory for keeping control over their producers and the different steps in the handling of milk; just as a social worker can go into a poor district of a city and in a short time bring about a tremendous reform in tenement houses and in the conditions of living among those people, so can a sanitary expert go into a dairy district where dairy farmers are producing milk for large cities and in a very short time supervise and instruct those producers so as to transform milk which may have contained millions of bacteria into milk containing a very few thousand. That is being so repeatedly illustrated now, that the industry is rapidly learning the value of substituting for ordinary commercial men in charge of their shipping stations, men with some degree of sanitary training who can take supervision over the activities of milk producers. Now, the feasibility of that plan of producing clean milk for large cities justifies the establishment of grades and standards for the control, by regulation, of the milk supply, because certainly it is an injustice to a clean producer to label his product with the same label that the milk of the dirty producer is labeled, and it is an injustice that it should be dumped into the same tank and sold for the same price. We are met with the argument that so long as milk is safe by pasteurization, we should not inquire too closely into its origin. I feel that as persons interested in public health, we are justified in putting forward claims of decency as fundamental, and that what may be called the pleasure of life or of drinking our milk or eating our food is sufficient justification for insisting on a distinction being made between two articles equally safe, but one of which is decent.

Dr. McCormick (*Asheville, N. C.*): I want to endorse the sentiments of Doctor North and Doctor Arms regarding the invaluable health aid to the milk inspectors and milk officers, of the laboratory. I had the pleasure of meeting Doctor North and Doctor Arms at Cortland at the meeting of the Milk Committee, and that has been invaluable to me in my inspection. I find also that the thing which we have found applicable from a laboratory point of view tended to the simplification of milk production. The milk pail itself is the basis; the milk pail I obtained in Cortland has been the basis of clean milk. I have to tell the dairyman God would never forgive me for recommending a strainer, and I tried to get them to cut it out. When I was first milk inspector I taught them to strain milk and I hope God will forgive me for ever telling them to strain the milk. Keep it clean. You cannot wash milk: you cannot take the dirt out after it is once there. I found my laboratory most valuable in teaching the dairyman the size of bacteria and how utterly impossible it is to get them out with a strainer, and they go back thoroughly persuaded that you cannot strain bacteria out of milk and that milk,

once dirty, is always tainted. A closed pan—and I know none better than that designed by Doctor North—is the prime essential of clean milk.

Dr. G. E. Goler (*Rochester*): I agree for the most part with what Doctor Arms has said. I can add one important thing to the discussion, that is the value of keeping milk cold. Many men are deterred from building ice houses because of the expense of ice and because ice does not keep in the ice houses they do build. For many years it has been our custom to build an ice house. We use the Rochester Ice House. It can be built for $60, not including the cost of labor, and will keep ice so perfectly that after the lapse of five or six months, you can take ice out of this ice house with the snow upon the ice, just about as you put it in in the winter time. I am not here to advocate or advertise magazines, but that ice house, as well as a combined fireless cooker and icebox that can be built for $4.00, will run a family of five, keep food cold for five days, with an expense of 50 pounds of ice, and it will be described in the January number of *Good Housekeeping*. I should say that ice house holds 50 or 60 tons of ice and can be built for $50 or $60.

Dr Chas. J. Hastings (*Toronto*): I don't think one can emphasize too highly or too much the significance of refrigeration, but it has been wisely pointed out that we must have clean milk to begin with; we must get clean milk. It is not a matter of making it clean afterwards, and after all, the human conscience, while we appreciate it very much, yet we find that there is more conscience in a great many people lurking in their pockets than there is in their hearts, and in the better part of them, therefore you have to appeal to the pockets very often, or do something that will affect their pockets in order to properly appeal to their conscience. Now, if you absolutely prohibit, by your dirt test, which is one of the best and most efficient methods of controlling it, because you cannot always watch the methods of production, but by using the dirt test you can decide for yourself whether that milk has been produced under reasonably sanitary conditions or not; then if it has not, either dump it into the sewer after you have tried that test or return it again after coloring it. Our method at Toronto was at first to dump all milk of that kind into the sewer. We dumped a good many hundred gallons the first year of our campaign into the sewers, and it had a very desirable effect; then the objection was made that if we had sent that milk home, they could have used it for feeding to the hogs. We were a little bit doubtful whether people who would send dirty milk to the market would feed it to the hogs after it was sent back, so we secured a coloring matter that would color it a beautiful pink color, so that even if an 8-gallon tin was diluted with another 8-gallon tin, it would still have that pink color, so we color it and put on a large red label stating that it is unfit for human consumption, and return it. Of course the man gets the benefit of that advertising while the milk is being returned. Another important method is advertising the standards of the different dairies in your municipality. I don't know of anything that will create a clamoring among dairymen and vendors alike quicker than publishing a list of the standards of different dealers, and they will endeavor very avidly to get into that list, because their clientele will very soon begin to inquire why they are not on, and occasionally those that have been on are dropped off and it becomes intensely interesting to see how they will scramble to get back. All these things are important and we should demand clean milk so far as barring contamination is concerned, but we must remember that clean milk may be far from bacteriologically clean. We must also remember the danger of tuberculosis in the herd, the danger of bovine tuberculosis so far as children are concerned, and which is responsible for about 26 per cent. as our experience tells us; therefore we should get milk that is absolutely clean from barnyard contamination and then make it bacteriologically clean by scientific pasteurization.

MORTALITY STATISTICS AND THE PHYSICIAN.

GEORGE H. VAN BUREN,
Bureau of the Census, Washington, D. C.

Read before the Vital Statistics Section, American Public Health Association, Jacksonville, Fla., December 2, 1914.

THE chief value of mortality statistics is (or should be) in their presentation of deaths by causes. The compiler is chiefly dependent upon physicians for the proper statement of causes of death on the death certificates which he must use as the basis of any matter that he publishes. Unless the physician gives this information in such a way as to describe all of the known morbid conditions that caused the death of his patient, it is evident that, no matter how well-ordered and painstaking may be the statistical system of the compiling office, the value of the published results, as being representative of actual rather than reported conditions, will be seriously affected.

Our statistics of deaths are compiled *as reported*, and unless vital statisticians "go behind the returns" in efforts to obtain corrected statements, it is a certainty that the incompleteness of some reports must lead to the assignment of many deaths to statistical headings under which they *do not* belong and the consequent failure to assign such deaths to the titles to which they do belong.

The great majority of you gentlemen who are members of the Section on Vital Statistics have had practical experience in the compilation of statistics of causes of death; you have been "behind the scenes," you have worked with death certificates with a view to the translation into cold figures of the returns of causes of death reported thereon; and you realize that such figures, based upon the data we have been and are receiving, are far from being representative of actual conditions. To me it seems that the registration and compiling offices of today should devote more time and energy to getting in touch with the physician, for the physician is the fundamental source of our data. In other words, those who are responsible for published figures of causes of deaths should bend every effort toward bringing the reports into closer relation to the facts. Every possible effort should be made to let the physicians know what we want and why we want it. It is my contention (and this is supported by thousands of replies to letters sent to physicians by the Division of Vital Statistics of the Bureau of the Census) that in the great majority of the cases the doctors are able and willing to supply the information needed for correct classification; the reason that it is not given in the first place in so many instances being that they do not realize the necessity for giving it.

A great and fundamental defect in our mortality statistics is due to the fact that the material used in their building is material intended for other purposes. No one who has "edited" reports of causes of death as they ap-

pear on the certificates can have failed to observe that in very many cases our physicians do not write them with any thought of their use for statistical purposes. Hence the need—yes, the necessity—of carefully planned, comprehensive effort to bring home to our physicians the necessity of full and accurate description of the cause of death, if known.

The Bureau of the Census has been working along these lines for years. In 1903 it published a circular on the "Relation of Physicians to Mortality Statistics." This pamphlet contains an arrangement of the titles of the International Classification of Causes of Death (first revision) with explanatory notes in the form of reminders of errors that are apt to be made in reporting deaths from certain causes. As an example, the physician is asked to remember, by a comment following title number eight (whooping cough) that "In deaths from bronchopneumonia *following* whooping cough, the primary cause should invariably be stated." The pamphlet also contains a "List of Indefinite Terms Frequently Used by Physicians in Stating Causes of Death, but Which Should be Avoided." This list comprehends over 200 of these expressions and following each one there is a statement of the further information required for proper classification. This circular was sent to every physician in the United States and the effect was most excellent, as many doctors manifested their appreciation by making their certificates conform to the suggestions noted. In several other pamphlets issued by the Bureau of the Census and in the text of several of its annual reports the importance of full and accurate statements of cause by the physician is discussed.

While all of these efforts have been rewarded by improved data, the experiment of direct communication with the physician as conducted by the Bureau of the Census in 1912, the results of which were published in Mortality Statistics, 1911, has proven to be most satisfactory and has indicated the method of procedure, which, in my opinion, will, if carried out each year, be instrumental in raising very appreciably the standard of our mortality statistics. Five terms commonly reported as causes of death were selected, and letters were sent to the signing physicians enclosing copies of the medical certificates of death and asking for any additional information that they could supply which might assist in the classification of the causes. Replies were received to 71 per cent. of these inquiries; almost invariably they were courteous in their tone and many of the physicians took occasion to thank the Bureau for calling their attention to the incompleteness of reports which they had believed were sufficiently specific. The five expressions selected as a basis for the experiment were "meningitis," "paralysis," "convulsions," "pneumonia," and "peritonitis." As a result of the additional data furnished the Bureau the net change in the classification of the cases about which we communicated was 57.1 per cent. The most notable changes were those in the "meningitis" cases of which 85.9 per cent. were assigned to other titles as the result of

what the physicians told the Bureau in answer to these inquiries; the replies to the "peritonitis" inquiries brought about different assignments for 77.5 per cent. As noted in the discussion of the experiment (Mortality Statistics, 1911, pages 36 to 38) the results indicated that several of the epidemic diseases, together with conditions like tubercular meningitis, tubercular peritonitis, diarrhea and enteritis (infantile) and other diseases were not being charged with hundreds of deaths of which they were primary causes. The experiment was most interesting in that in almost all of the cases the changes were *real corrections*, as exemplified by a return of "peritonitis" being amended by the statement "due to perforation of gastric ulcer," or a report of "pneumonia" being changed to "bronchopneumonia following measles." The number of replies received was less than 2,000 and, possibly, deductions based upon so small a number may be considered as subject to revision. Personally, I believe they are fairly representative. During 1914 the experiment was conducted on a much larger scale, and while the replies to the letters of inquiry have not been assorted and classified at this time, I believe that when this is done it will be most conclusively demonstrated that correspondence with the physician, when his description of the cause of death is unsatisfactory from a statistical standpoint, will result in the classification each year of many thousands of cases under titles not mentioned on the original certificates. By keeping everlastingly at it, the educational effects are bound to improve our statistics of causes of deaths. This plan of direct communication has been successfully carried out by the office of the Registrar-General of England and Wales, the Statistical Bureau of the Metropolitan Life Insurance Company, and (I am informed) by one or two of our state registration offices.

There are, of course, many errors in the statement of cause which it does not lie within our power to correct; notably, many cases of sudden death in which we must depend upon inquest findings; cases where physicians are called when the decedent was moribund; cases in which but one call was made and the patient died days or weeks later, thus affording little opportunity for accurate diagnosis; and lastly the admittedly large number of cases in which diagnoses, based upon clinical findings alone, are incorrect. It is impossible to estimate the proportion of all the cases which these classes constitute. At any rate, they are conditions that we cannot remedy. We are more interested in the class of errors which we can correct and prevent. The fact that stands out is that we can raise our standard of accuracy merely by asking the physician for information that *he is able and willing to give us*, and at the same time point out to him an error of omission, which he will be glad to correct and will be unlikely to repeat if he has occasion to write another certificate covering a similar case.

In this connection it should be borne in mind that the death of the patient—an event which to the vital statistician is the basis of a few items for classifi-

cation—is chiefly significant to the physician as the end of a losing battle against disease or injury. It is rather to be expected that the doctor—who is not a statistician—and whose efforts, probably, during the few days or hours immediately preceding his patient's death, have been centered upon combating a fatal *complication* of the primary trouble, should have the terminal condition uppermost in mind when writing the death certificate, and fail to note thereon the cause which was primary, and the one of statistical significance. Is it not, then, the duty of the statistician, whose aim should be to present the closest possible approximation of *actual* (not reported) conditions, to take advantage of the proven willingness of the physician to correct his unintentional errors of omission?

It may possibly be contended that if the scope of our inquiries to physicians were extended to cover reports of conditions included under those titles of the International List of Causes of Death to which additions are made on the basis of the information conveyed in the replies received, the additions would be practically neutralized by deductions. In other words, it may be suggested that if letters of inquiry covering every reported death were sent out, all errors of statement would be found to be approximately compensating in accordance with the so-called "Law of error." It will be fully appreciated, however, by those whose experience in compiling mortality statistics has been fairly extensive, and by any medical man who chooses to give the subject consideration, that there is no place here for the application of this law. The reason is simple: The basic data are not equally amenable to misstatement. Given 5,000 returns of whooping-cough and 5,000 returns of diphtheria, we feel quite confident that the *primary* cause is before us for compilation, and that if not, there is no more reason to expect a report of whooping-cough in a case of diphtheria than there is to expect one of diphtheria in a case of whooping-cough. Here applies the "Law of error," for there is reason to believe that any such errors will counterbalance. But it will be evident to all that if 5,000 returns of appendicitis and 5,000 of "peritonitis" (its most frequent fatal complication) are received, in the great majority of the "peritonitis" returns *the primary cause is not before us for classification*, since peritonitis is seldom idiopathic, and it will be no less evident that there is more reason to believe that there have been many statements of "peritonitis" when appendicitis was really the primary cause than there have been of appendicitis in cases of idiopathic peritonitis.

In several of the replies received to the inquiries sent out by the Bureau of the Census in 1914, physicians have stated that they would have given data describing the sequence of events, if the space allotted to causes of death on the Standard Certificate of Death had been sufficient to permit giving details. In this connection, I suggest that the vacant space on the reverse side of the certificate could well be devoted to the *case history*, with an admonition in the form of an amendment to the note following the present cause

of death space to: *Add in the space marked case history on the reverse side any other data relative to the cause of death that will aid in classifying it.* There is no doubt that this would elicit information which would form the basis for correct classification of many deaths which are now incorrectly assigned on account of non-statement of the primary cause.

During the month of October the state registrar of one of the states of the registration area, while visiting the Census Division of Vital Statistics remarked that he had observed the beneficial effects of the census inquiries in his state. He told us that several of his physicians had written him telling of the receipt of our letters and gave it as his opinion that this method was sure to bring good results.

The great majority of our physicians are willing to coöperate with the vital statistician; they are willing to report causes of death in such a way as to insure their classification under the proper headings; but many thousands of them do not know that many of the terms they have been using for years are not acceptable to the statistician for the reason that these terms admit of more than one interpretation and necessitate *guesses* as to what really caused death, when, as a matter of fact, the physician could just as well have described the case in such a way as to insure its correct classification. I do not believe that the average doctor who writes "pneumonia" *or* "cancer" *or* "Meningitis" *or* "cardiac dilatation" or scores of other terms in more or less common use, has any thought but what they will be acceptable in every sense, and yet we all know that to the statistician who wants to give to the public figures with reference to the disease of which the "pneumonia" was the terminal symptom, or to publish tables showing deaths from cancer according to the seat of the disease, or to segregate deaths from *epidemic* cerebrospinal meningitis, such expressions are indeed "thorns in the flesh."

As a very prominent American vital statistician has stated, "the validity of the statistics cannot rise above the authority of their source," but in this country, where comparatively few deaths are certified by non-medical men the physician is practically the sole source of our data in regard to causes of death, and we need but acquaint him with the expressions that are unsatisfactory from the standpoint of the statistician to get him to disuse many of these common forms of reporting causes of death that are so unsatisfactory, vague, and indefinite.

Let us use every means in our power to impress upon our physicians the statistical mission of the death certificate! There is no better way than by concrete example. Show him what is wanted and wherein he has failed to supply it. Send him in connection with your inquiry any literature you publish bearing on the subject of classification of causes of death. The result will be that after a few years there will be no necessity for the validity of our mortality statistics to "rise above the authority of their source," for we want no better source than the American physician who has the proper opportunity to diagnose his case.

REPORT OF THE COMMITTEE ON ORGANIZATION AND FUNCTIONS OF MUNICIPAL HEALTH DEPARTMENTS.

JOHN A. VOGLESON, *Chairman.*

Read before the Public Health Officials Section of the American Public Health Association, Jacksonville, Fla., December 2, 1914.

YOUR Committee in its three previous reports has dealt to a large extent with general surveys of the Organization and Functions of Municipal Health Departments, as they are constituted in municipalities of the four countries represented in this Association. The report of 1911, published in the JOURNAL of the Association for May 1912, in addition to its summarization of how the health departments reported upon were organized and of the functions they were performing at that time, gave a constructive suggestion for the general conduct of the municipal health work.

The Committee for the year 1914 has thought that it could best serve the Association by taking up one of the general statements of the report for 1911 for examination in detail with the view of ascertaining the possibility of further constructive effort. It has, therefore, selected Regulations Governing Plumbing and House Drainage for the subject of this report.

In consideration of our subject, the first question to be answered is an important one, namely,—To what extent are health officers charged with the formulation or administration of plumbing and house drainage regulations? A brief survey has, therefore, been made of available Plumbing Codes and from that examination we compiled the following information:

CODES EXAMINED—125, representing a population according to the Census of 1910 of approximately 24,000,000 persons in cities of the countries represented in this Association. In 80 cities, representing 56 per cent. of the above population, the health authorities are directly charged with administration of functions related to regulation of plumbing. In 33 cities, representing 40 per cent. of the above population, the administration of plumbing regulations is lodged with boards, bureaus or departments of buildings, works, control, etc., and we have designated such supervision as engineering control. In the remaining 12 cities, representing 4 per cent. of the population examined, the administration is lodged with the "plumbing inspector." Of the codes examined, they were adopted either by state legislation, local ordinances, or by boards charged with the duty of making plumbing regulations. We probably do not make an essential error in assuming that the ratios determined from the codes examined are fairly representative of general allotment of the administration of plumbing regulations among the several municipal departments as generally constituted. Leaving aside, then, consideration of

all questions except those of executive control, we find that health officers are in the main charged with this function. For that matter, in codes made and administered by other than health authorities, practically all carry a subcurrent of influence by such bodies or considerations of health. The most recent legislation of broad significance, enacted on the subject under consideration, places the authority for making plumbing and house regulations with state health authorities.

In the general examination of codes, we find great diversity of practice and equipment required, and a lack of standardization of materials entering into plumbing work. This diversity appears particularly in the matter of ventilation of the drainage system and again the regulations governing traps. The principles underlying the design of a satisfactory system of house drainage are in the laws of physics. Physical phenomena vary with climate, latitude, altitude and other geographic factors, but the variations in plumbing regulations do not appear to vary in accordance with changes in physical phenomena in so far as they are known to your Committee. Some cities require much more complex systems of plumbing than others, and we find from time to time in the press, and almost daily in the administration of our duties as health officers, that the public mind is still possessed with the idea that sewer air is a specific cause of disease.

The healthfulness of workers in the sewers of Paris is oft referred to in discussions of this subject, and the investigations of Professor Winslow into the bacteriology of sewer air are now well known. There is now extant a large fund of reliable data on experiments and investigations in plumbing and drainage, and to the literature on this subject there was added in 1912 a most interesting report rendered to the English Parliament by a committee appointed to investigate the use of intercepting traps, from which we quote a statement as to the results of an investigation by Doctor Turton in the city of Leeds.

"Table I, which summarizes the results of his investigation, shows that the proportions of defective drains in houses invaded by typhoid fever, or diphtheria, and in houses not invaded by disease, were 27.94, 27.88, and 27.30 per cent. respectively, or practically the same in all three classes of houses."

In the matter of equipment required, we find tables in various Codes which do not conform to varying climatic conditions, and again there is considerable variation in their requirements for mechanical practice. In mechanical practice plumbing codes are directly related to the problem of water waste which confronts practically all cities, especially in the United States. Many of our large municipalities have expended large sums of money for supplying purified water. Without exception, all of these cities are bearing heavy financial burdens on account of water waste. Health officers did much toward bringing about the benefits that are accruing from improved quality of water supplies, and through their control over water using fixtures they still have something to do in assisting to secure an economic adjustment of the

TABLE I.

	No. of houses examined.	Drains.	
		Defective.	Not defective.
GROUP I. House to House Inspection	2,275	621 27.30%	1,654 72.70%
GROUP II. Houses Invaded by Typhoid Fever	1,428	399 27.94%	1,029 72.06%
GROUP III. Houses Invaded by Diphtheria	3,914	1,092 27.88%	2,822 72.12%
Total	7,617	2,112 27.73%	5,505 72.27%

financial burden imposed. And further, the controlment of water waste will not only benefit the cities which have incurred the expense of securing potable water but it will also permit the necessary expenditures for this purpose to be brought within the financial ability of communities which still suffer from lack of good water.

The lack of standardization appears in the requirements for some of the commonest fittings. We have noted variations in the weights required for soil pipe when called for under specific names, such as standard, medium and extra heavy. While in soil pipe itself the variations noted were not great, yet in the fittings which go with the pipe and form an essential part of the drainage lines, we find a complete absence of control except in a few of the Codes of very recent date where notice has been taken of this omission from previous Codes and the defect corrected. To illustrate, we have computed the per cent. variations of the weights given for some of the quite common fittings which were purchased on the open market and weighed by investigators of this form of plumbing supplies. (See Table II.)

This variation may have been due to variation in length of fittings as well as to variation in thickness of shell but members of your Committee have personally examined some such fittings which had a thickness of shell of less than $1/16$ of an inch on one side and a scant $1/8$ on the other. The tendency of this variation is to affect both durability and cost. With the thin-walled fittings, the durability desired may not be obtained, and the variations in weights will surely influence the cost of the work with the probability that the cost of the maximum

weight fittings will be in general control, and a higher cost for plumbing prevail.

Your Committee has endeavored to learn something about the cost of plumbing and secured from architects correct for the cost of plumbing and drainage work. It was also ascertained from a table published by the *Review of Reviews* that the estimated value of plumbing fixtures sold annually in the United States was $46,-

TABLE II.

VARIATIONS IN FITTINGS.

Standard.	Minimum.		Maximum.		Difference.		Difference is per cent. of minimum.
	lbs.	oz.	lbs.	oz.	lbs.	oz.	
4″ 1/4 Bend	9	—	11	1	2	1	22.9
4″ 1/8 Bend	4	12	11	—	6	4	131.8
4″ 1/16 Bend	4	8	9	4	4	12	105.5
4″ x 4″ San Tee	13	—	18	—	5	0	38.5
4″ x 4″ Y	13	—	17	8	4	8	34.6
4″ Long Sweep	13	4	20	—	6	12	50.9
Extra heavy.	Minimum.		Maximum.		Difference.		Difference is per cent. of minimum
	lbs.	oz.	lbs.	oz.	lbs.	oz.	
4″ 1/4 Bend	10	8	16	8	6	0	57.2
4″ 1/8 Bend	9	—	12	8	3	8	38.9
4″ 1/16 Bend	9	—	11	2	2	2	23.6
4″ x 4″ San Tee	17	—	32	10	15	10	91.9
4″ x 4″ Y	18	—	25	4	7	4	40.3
4″ Long Sweep	13	—	23	8	10	8	80.8

and builders an estimate of the percentage of the total cost of building, which is usually expended for plumbing and drainage. These estimates ranged from 5 per cent. to 10 per cent. and it would appear that generally speaking, 10 per cent. of the total cost of the building is approximately 387,100. This expenditure for general items entering into building construction is only exceeded, according to the estimate quoted, by that for paint and painting materials, bricks and structural steel. It may be asked, Of what interest is the cost of plumbing to health officers, and some may

consider that it is a problem for engineers rather than health officers. In large buildings the last consideration may be particularly pertinent, but in the many thousands of smaller habitations, particularly in our growing problem of housing, and in our ever-present problem of sanitary inspections and maintenance, the task is charged to the health officer by precedent, by general context of the laws enacted in the past, and by the trend of recent legislation.

It is the specific function of house drainage systems to afford a tight, substantial and direct conduct of liquid wastes or wastes in suspension from habitations, or other occupied places, to some properly arranged place of disposal, and to perform this function without nuisance. That system is best which accomplishes this comparatively simple requirement in the most economical manner. One of the needs of the day in this particular is a standard plumbing code, giving the minimum requirements for good drainage in order to permit housing requirements to be freed from the burden of intricate plumbing.

Not the least of the benefits of this Association is its influence in establishing methods for standard practice in health work. It has met with signal success in many lines of such endeavor, and your Committee most earnestly recommends that in this opportunity to bring about standard practices in plumbing and house drainage, particularly in the matter of minor requirements, there exists a still further opportunity for needed work. To that end we respectfully suggest that a Committee be appointed to prepare for submission to the Association at its next annual meeting, a draft of the Standard methods of the American Public Health Association for Plumbing and House Drainage.

The report was adopted.

REPORT OF THE COMMITTEE ON STANDARD METHODS FOR THE BACTERIAL EXAMINATION OF MILK.

COMMITTEE, M. P. RAVENEL, *Chairman;* H. W. CONN, W. H. PARK, JOHN F. ANDERSON, ROBERT S. BREED.

Read before and adopted by the Laboratory Section, American Public Health Association, Rochester, N. Y., September 10, 1915.

THE Committee has deemed it unwise to make a final or complete report at this meeting. One reason for this is that there are at present three committees appointed by different organizations, all of which are working on standard methods for milk examination, and it is our hope that these three committees can agree on a uniform method for use throughout the country. Since there are numerous duplications in the personnel of these committees, we feel that it will be entirely possible to accomplish this end. We beg, therefore, at this time to make a report of progress only. The recommendations which follow are for the routine analysis of milk only, and are not advised for scientific research work.

Samples.—Samples shall be not less than 10 cc., put into sterile containers and well iced. In taking samples from containers such as cans, etc., a straight-sided tube of glass or aluminum is to be used. The tube is to be inserted slowly, the top end not being covered with the finger until the tube reaches the bottom. It is then closed and the tube withdrawn. Stirring of the milk with the tube in the cans assists in obtaining a uniform sample.

Temperature.—If the temperature is required it should be taken after the sample has been removed.

Culture Medium.—One culture medium is recognized—agar made after the standard method recommended for water analysis, 1915 Report. This provides for the use of meat extract, three grams per liter, and best peptone available.

Reaction of Culture Medium.—If after titration the reaction is between 0.5 and 1. do not adjust.

NOTE.—It is easier to get a clear agar if the bouillon is filtered before adding the agar.

Dilutions.—For samples of unknown character dilutions of 1 to 100, 1 to 1,000, 1 to 10,000 shall be made using sterile water and pipettes after the ordinary method. In case the character of the milk is known, less than three dilutions may be made; but in no case shall less than two plates for each sample be made. Grade A, or its equivalent, should be plated in duplicate, and a dilution lower than 1 to 100 may be used.

Shaking.—Samples must be shaken twenty-five times. Shaking is defined as meaning a rapid up and down motion with an excursion of not less than one foot.

Pipettes.—Pipettes must be made to deliver between graduation marks, not simply to deliver.

Pouring Plates.—The melted agar must be poured promptly after meas-

uring out the proper quantities of milk. Not more than twelve plates must be allowed to accumulate after the distribution of the milk into the plates before pouring the agar.

Incubation and Counting.—One standard temperature only is recognized—48-hour incubation at 37°C.

If possible count those plates containing between 30 and 200 colonies. If there are none such, count those plates containing nearest to 200 colonies. The whole number of colonies on the plate shall be counted where the plates contain less than 200 colonies.

Counting Lens.—The lens recommended by the Committee last year is here more fully defined. It is known as Engraver's lens No. 146, Bausch & Lomb Catalog. It is designated as 3½X, its magnification being 2½ diameters. Persons who are nearsighted should wear their ordinary glasses while using this lens. Farsighted persons should use the lens without their glasses.

Sediment Test—If the sediment test is desired one of the forms of apparatus using filtration through a cotton disc must be used.

Time of Plating.—Milk should be plated as soon as possible after the collection of the sample. When not plated within five hours, this fact should be stated on the report.

Microscopic Examination.—Direct microscopic examination is now under extensive study and the Committee is unable to make any recommendation at present concerning its use, but hopes that it will be in a position to do so before the time of its next report.

Interpretation of Results.—This depends on the history of the milk, and the Committee is not ready to make any recommendation at present.

The Committee recommends that this report be adopted for the routine examination of milk during the coming year.

The Committee asks that this report be published and distributed for criticism and suggestions during the year.

Health Department Reports and Notes.

REPORTS.

Los Angeles.

The Report of the Los Angeles Department of Health for the year ending June 30, 1915, has just been received. It is an excellent report well illustrated with half-tone photos and a number of line plates showing the comparative prevalence of some of the communicable diseases for a number of years past.

The estimated population given in the report is 500,000, and on this basis the death-rate is 11.47. This is without deduction for non-residents. The infant mortality rate is given as 69.15 and of this, it is stated that 21.5 per cent. are due to prenatal causes. If this is correct, it is surely a very excellent showing. The birth-rate is 16.63.

Physicians are required to report cases of venereal disease by number. Four hundred and eighty-two cases were reported during the year. The report states that these returns are not satisfactory.

The milk inspection division is adequately conducted. It is reported that 80 per cent. of the milk supplied in Los Angeles is pasteurized. Restaurants are inspected and scored. The department's total appropriation for the year was $134,000; of this amount, $3,400 was not expended. The housing commission presents a very well written report profusely illustrated. The tenement house problem of the eastern cities does not seem to be acute but many ramshackle single houses were discovered which were unfit for human habitation. Conditions were improved in some of the crowded cheap lodging houses.

Manchester, England.

The medical officer of Manchester is obliged to report an increase in death-rate for 1914.

Following the letter of transmissal, the report opens with a statement of general statistics for the year from which it appears that the estimated population was 739,136, the death-rate 16.76, and the birth-rate 25.30.

The work of the department was increased during the year, largely from causes arising in connection with the war, and at the same time a number of its valuable officials were lost by enlistment and it has not been possible to satisfactorily replace them.

The infant death-rate was 128.63 per 1,000 births, which is remarked as being almost the lowest recorded for the city.

The three principal causes of death were all respiratory diseases, ranking in the following order: Pneumonia, tuberculosis and bronchitis. In the portion of the report dealing with restaurants and foodshops, it is stated that the kitchens of many restaurants were underground and were not in satisfactory condition.

The Manchester department of health has been obliged to cope with many difficulties arising out of the war and in extenuation of the slightly increased death-rate, which was probably unavoidable, the following statement is made:

"It would have been a gratification to record a still further advance in the health of Manchester, but fluctuations must be expected to occur; the recession is not a large one, and new means will be found to effect gains in health, which is the largest element in the wealth of the community."

Wilmington, Delaware.

The report of the secretary of this board has reviewed in rather brief but very satisfactory form the various activities of the Wilmington Health Department. Important topics are given a brief summary of one or more well-written paragraphs and each such title is printed in large black-face type which makes it easy to find.

Under the heading "Deaths" the following statement is made:

"There were 1456 deaths and of this number, 57 died in our City Hospitals, who were non-residents. Deducting these from the whole number of deaths for the year, leaves a total of 1399, giving the City a death-rate of 14.88%, which is an excellent showing and speaks well for a healthful condition; yet at the same time, the number of deaths of children under one year is entirely too large. Ninety-nine of the deaths under one year were caused by gastro-intestinal infection, nearly all of which were due to faulty feeding. Other information can be obtained from the tabulated table of deaths."

This subject of infant mortality, which is mentioned in the preceding paragraph, is given more extended treatment elsewhere in the report.

The death-rate given in this report, 14.88, is slightly in excess of that for 1913 which was 14.38.

A number of common communicable diseases are not yet reportable in Wilmington, including whooping-cough, measles, tuberculosis, chicken pox, trachoma and cerebro-spinal meningitis. These and others are on a list which the board has been urging the city council to make reportable.

Money was appropriated during the year for a very limited amount of equipment for a bacteriological laboratory and a city physician with some laboratory experience was appointed.

The Port of New York.

The JOURNAL is in receipt of the Annual Report of Health Officer of the Port of New York for the year 1914.

The office of Health Officer of the Port of New York has been long maintained as a department of the state government. It is entirely distinct from both the New York City and the New York State health departments, but is one of the most important health departments in the country. The health officer in one of his early paragraphs expresses this fact very happily when he says: "The Port of New York is the sanitary frontier of the United States. More than 70 per cent. of all the immigrants admitted to the United States annually are admitted at New York. The percentage of such immigrants whose initial inspection is at quarantine is even greater, for New York is the first American port of call of many liners that carry immigrants to the port of Philadelphia."

The report contains a graphic representation of the organization of the department and shows the following general divisions of the work; Hoffman Island, where the detention wards and the observation hospital is located; Swinburn Island, with its quarantinable disease hospital; the General Administration division in charge of financial and statistical work and the fumigation of vessels; the Laboratory; the boat service, and finally, the Marine Medical Inspection, which is, of course, the fundamental feature of the work.

Savannah, Georgia.

The 1914 Annual Report for Savannah shows that tuberculosis was the largest single factor in the death-rate, it being charged with 186 deaths. Pellagra was fifth on the list with 33. The death-rates for the past four years are given on the first page of the report. In 1911 the death-rate was 24, and in 1914 it had been reduced to 18.49. The white death-rate is not excessive. The figure for the total death-rate is due to the large colored population, among whom the death-rate from a number of diseases is very large. All but six of the 33 deaths from pellagra were colored.

The report shows that measles and whooping-cough are not reportable diseases, despite the fact that there were 17 deaths from whooping-cough.

The health officer complains that less than 80 per cent. of the births in Savannah are reported and remarks that "It is easier to trace

the pedigree of a fine horse, dog or hog in Georgia, than it is to trace the pedigree of the average citizen in that state."

The frankness with which Doctor Brunner, the Savannah health officer, says what he thinks of the legislature is refreshing. The following is an extract:

"During the year the state legislature enacted a Vital Statistics Law, but some of the politicians were against the bill and afterwards supported it, in order that there would be no administration of the law; this is in keeping with the average legislation, touching on the protection of the public health.

"The boll weevil, ticks on a cow, or hog cholera, gets sufficient money to admit of a prosecution of the law; but, when it comes to the expenditure of money for the preservation of human lives, the appropriation of the work never goes beyond the salary of such persons, whose only qualifications are that they stand in with the political machine."

This report is a good one in itself and, moreover, it makes it clear that the department at Savannah is accomplishing results.

Cincinnati, Ohio.

Dr. J. H. Landis begins his usual excellent report with a statement regarding the city's death-rate. The total death-rate for 1914 was 15.98. An early paragraph of the report calls attention to the fact that in 1914, for the third time in five years, Cincinnati's typhoid death-rate was the lowest of 20 of the largest cities in the country, being 5.71 per 100,000 of population.

Doctor Landis calls attention to a reduction in the death-rates for infantile diarrhœa, tuberculosis and all forms of respiratory diseases. The reduction in diarrhœal diseases is traced statistically to the filtration of the city water supply in 1907 and the introduction of efficient milk inspection in 1911. Cincinnati maintains a comprehensive system of sanitary inspection covering various places in which food is prepared and sold.

Saloon inspection revealed numerous cases where improvement was needed but the report states that results obtained in these places were very gratifying to the department. The work of the laboratories increased 50 per cent.

Toledo, Ohio.

The 1914 Report of the Toledo Board of Health presents a unique and very desirable departure. On its front cover is the following useful information for the prospective reader: Population, 184,126; deaths *during year, still-births excluded*, 2,846; death-rate *per thousand population* 15.45; births during year, *still-births excluded*, 4.413; birth-rate *per thousand population*, 23.96.

This report contains only thirty pages but appears to cover the work done by the department during the year in adequate fashion.

The report of the chemist and of the dairy and food inspector is included. There is a brief summary of the work done by the bacteriologist and a tabulation of the number and character of nuisances abated during the year.

Among the mortality and morbidity tables the one showing the contagious diseases from 1897 to 1914 inclusive is particularly valuable. This report reveals that during 1914 there were 14 deaths in 73 cases of whooping-cough reported.

NOTES.

Important Changes in Registration of Deaths in New York City.—The 1915 edition of the Sanitary Code of the New York City Department of Health shows a number of important changes with regard to the registration of deaths. According to Section 32, the report of the attending physician must now state "the chief and determining, and the contributory, cause or causes of death." In former years nothing more specific than "cause" was demanded. The importance of a statement of joint causes in determining the true cause of death is obvious.

The physician must also state whether an autopsy has been performed, and, if so, what the findings of such autopsy have been. When death is the result of accident, suicide or homicide, the coroner's report must state how, when, and where the injuries resulting in death have been received.

The New York City Health Department is a good example of an official body which has been invested by the law with adequate authority, and which uses its powers earnestly and courageously for the common good. The health departments of other cities would do well to emulate the zeal of this organization, particularly in setting up equally high requirements for explicitness on the part of physicians and coroners in the mattter of death registration.—*L. I. D.*

✠

Sanitation at Arrowrock Camp.—That excellent results are attained by our government in the application of public health principles on its construction projects, is well evidenced by the remarkably high degree of health efficiency maintained for four and a half years at the Arrowrock camp. This camp was the home of the many men employed on the construction of the huge Arrowrock Dam, twenty miles outside Boise, Idaho. Some 20,000 men had had employment there and the maximum population at one time was 1,500 people. During that time, four and a half years, not a single death from an infectious disease occurred, and there was only one case of typhoid, and that was probably brought in from the outside.

To acquire such health records, it was necessary to require rigid adherence to the laws laid down by the sanitary supervisor. At Arrowrock were applied simply the main principles of public health, that is, medical inspection before employment; medical attention; pure water supply; proper sewage disposal; cleanliness of camp buildings and grounds; garbage in airtight metal cans, and collected every two or three days, then burned; sanitary toilets, with entrances screened against flies; anti-fly campaign. Sickness in this way was held at a minimum, and there were no epidemics.

✠

Weighed and Found Wanting.—In a certain district in England, namely Newcastle-on-Tyne, milk samples proved to be tuberculous or to contain an excessive proportion of organisms associated with excremental pollution. Yet the medical officer of health had been assured that this supply had passed through a pasteurization process at the city dairy before distribution. The health officer was not satisfied, so consequently tested one of the best equipped dairies.

Sample 1, original milk, as received from farm, showed B. coli present in 0.00001 cc., which was as far as the test was carried. Sample 2, after "pasteurization " at 160 degrees F., gave identical results as did sample 3 at 180 degrees. Sample 4 was "pasteurized" at 200 degrees F. and B. coli was found in quantities down to 0.0001 cc. And milk containing B. coli under 0.01 cc. is unsatisfactory!

It was discovered that the milk merely passed through the apparatus and proceeded direct to the cooler, so that the highest temperature reached was probably only maintained for a matter of moments.

It is to be hoped that if any of the health officers in this country should test the actual efficiency of the pasteurization apparatus used in dairies supplying milk within their jurisdiction, they would not be so unpleasantly disillusioned.

✠

12,000,000 Gallons of Untreated Sewage per Year.—According to the October *Engineering Record*, the District of Columbia discharged the above amount of untreated sewage last year into the Potomac River. The sewer depart-

ment of the District of Columbia and the Maryland State Board of Health are attempting to coöperate on this question, both in the light of the economic value of the hundreds of tons of removable organic and other matter, and of public health.

The question of the increasing pollution of the Potomac by the District of Columbia area and adjacent Maryland towns is a serious matter, and the abatement of these conditions should be secured. Otherwise it is believed that in a comparatively short time conditions will become sufficiently serious to constitute a nuisance.

"The interests of the District of Columbia are so immediate and the conservation of the purity of these streams so important as a measure of protection to the great national parks through which they flow, that in the interest of public health and sanitation it is necessary that some adequate remedy in the form of a metropolitan sewerage district be applied."

✻

Decrease of Rabies in New York City.—During September in New York City, 1,200 negligent dog owners were summoned to court by patrolmen of the health squad for failing to comply with the dog muzzling ordinance; 832 of these paid fines.

This strict enforcement and support of this ordinance is gratifying, and the results, indicated by figures concerning dog bites and rabies, prove that the law is beneficial to the people. These results show that the number of cases of rabies found in animals examined by the health department has decreased from 64, during the second quarter of 1914, to 15 for the corresponding quarter of this year.

✻

Grand Rapids' Proposed New Charter.—Provisions adopted by the Charter Commission of Grand Rapids, at the instigation of public health and social workers, allow the establishment of a health administration founded on the principles of preventive medicine. Health comes under the Department of Public Welfare, the full-time health commissioner to be appointed by the Director of Public Welfare. His only qualification is that he shall be a man "of recognized ability in public health work." This allows for the appointment of a trained sanitarian without the requirement that he be a physician. The recommendation was made that the health officer be allowed to appoint the city physician, but this did not carry. The city physician will also be appointed by the Director of Public Welfare. Other members of the staff may be appointed by the health officer, subject to the approval of the director and to the civil service requirements of the charter. The charter allows for the creation, under the health department, of a division of vital statistics; of communicable diseases; of food and sanitary inspection; of child hygiene and of education and publicity. One of the duties removed from the health department was the collection and disposal of garbage and refuse. This will be placed under the Department of Public Service.

The charter will be submitted to the people at the spring primaries unless a special election is called.

✻

School for Midwifery at Lincoln, Neb.—In the September *Bulletin* of the Department of Public Health of Lincoln, it is stated that the Lincoln birth records have shown that a large percentage of the cases of confinement are attended by so-called midwives. Following up this discovery, it was further learned that there were nine women who made a specialty of obstetrics in that city, and moreover that there had been many instances where other women without any experience or training had superintended cases of confinement. These women were not legally entitled to do such work, yet they had been attending 16.5 per cent. of all cases of confinement in Lincoln, and to all intents would continue to do so.

The Lincoln Department of Health, realizing the fact that "the mother's care and future health is dependent on the skill exhibited by the attendants," has taken up the responsibility of bettering the confinement conditions. A school of midwifery has been organized, meeting once a month, with the purpose of giving practical instruction by way of papers read, lectures by a medical practitioner versed in obstetrics, and practical demonstrations by the visiting nurse. In addition to this, a practical treatise on this subject is being published for these women. The object of this plan is to lessen the number of midwives and to enlighten those who are actually in the field.

From now on, midwives in Lincoln must be

registered, and in order to obtain their certificate of registration they must have attended fifteen afternoons at the school, and must present fifteen different statements signed by a doctor stating that they have assisted and nursed in fifteen cases.

Enameled Steel Signals in Filing Records of Contagious Diseases.—After looking over the various devices in use for the active file in a health office relating to contagious diseases, the county health officer of Los Angeles, Calif., finally hit upon a steel signal which slips over the edge of any card. These signals stand up over the edge, and can be obtained in twelve colors. By following the usual custom of the color of the quarantine sign one can identify at once the diagnosis of the case reported on the card, when placed in the file. Thus red clip, scarlet fever, green clip, diphtheria, etc. This scheme makes unnecessary the use of different colored cards. When the case is terminated, the clip is removed and card placed in permanent file. One set of signals will do for a great many cards and are not used up. They grip the card tightly, and for small card files have proved extremely useful. If a card is out of the file the clip immediately identifies it.

These clips are extremely inexpensive, and their use in the above manner is original and seemingly satisfactory.

"Quack" Medicines.—In California last month a medicine labelled "Fluid Extract Serum —$25.00" was analyzed at the state laboratory and was found to contain essentially fluid extracts of sassafras, sarsaparilla, cascara sagrada, and potassium bromide. The "serum" was advertised for the treatment of diseases of the skin, kidneys, stomach, and nervous system. One poor woman purchased one of these six-ounce bottles—price $25.00—and a second one for $18.00. Naturally it did not help her any, and it practically took all the money she had. The doctor, when called upon by an inspector, had left.

The California State Board of Health *Monthly Bulletin* for September goes on to say:

"It is a crime and an outrage for any person to prey upon the public in such a manner, and it seems specially offensive when the victim is a poor woman.

"This is an offense which can be handled through the courts if the information is presented to the proper authorities. The State Board of Health will gladly investigate any cases of this character that are brought to its attention."

Energetic Louisville.—The Bulletin *Health and Hygiene* for October, published by the Department of Public Health of the City of Louisville, Ky., clearly shows that this city is keenly aware of the benefits of public health work.

In a little note, it is announced that this city's fiscal year has ended, and there are published a few general results of the year's work. Louisville is justly proud of the results shown. She announces a decrease of 267 deaths from last year, a decrease of 23 from tuberculosis, o' 17 from typhoid. No deaths were registered from measles or scarlet fever, and there is a decrease of more than 50 per cent. in deaths from diphtheria. Infant mortality was decidedly improved. The deaths of infants under one year of age were decreased by 93, and the deaths of infants between the age of one and two years, by 42 from last year.

It seems that this city's greatest nuisance from the public health standpoint at present is the thousands of insanitary privies throughout the city—and if these can be done away with, as the department desires, Louisville's health record will be envied throughout the country.

Standardizing the Method of Handling Bottled Water.—Mr. Guy Eldredge, City Chemist of Fort Worth, sends in the following useful statement concerning the handling of Bottled Waters. "The objective of the investigation that led to the present method of handling bottled water, was the assurance to the consumers that the water in the bottles was of the same purity as the well water. This has been accomplished as near as possible, considering the personal equation.

"It was found and confirmed by bacteriological tests that the greatest source of contamination of a bottle of water after being filled at the well, was the handling of the bottle by the neck and the accumulation of dust from the streets settling on the cork and around the neck. To eliminate this contamination, a hood was devised which protects the neck of the bottle

from the time it is cleaned and filled until delivered to the consumer.

"All bottles are thoroughly cleaned, sterilized and rinsed. They are then capped with cloth hoods that have previously been sterilized and are then either placed in the wagon for filling or are stored in the bottling house. After filling, corks, that have previously been sterilized, are used and the hood replaced and kept in place with rubber bands. (Seldom found necessary.)

"In this way, after sterilizing, at no time does the hand come in contact with the neck of the bottle nor is it exposed to any appreciable dust.

"The hoods are made from a cloth much used for filtering (cotton flannel) and are efficient for the purpose for which they are intended.

"Various articles are at times found in the bottles returned to water companies and only by following some thorough and systematic method of cleaning and sterilizing can the same bottles be used repeatedly and the consumers assured they are receiving at each delivery a bottle of pure water."

*

A City with a Protected Milk Supply.—It would seem from the following extract from the bulletin of the *Toledo* (Ohio) *Sanitary Bulletin*, that the city of Toledo should soon have an improved health administration generally. It is particularly interesting to note the big step which this city has taken in the matter of pasteurization.

The action taken in Toledo is largely the result of a report made by Surgeon Carroll Fox of the United States Public Health Service, upon the health conditions of his city. A number of his recommendations are embodied in the reorganized system.

"Pasteurization of all market milk has been provided for, to take effect December 1, 1915. Seven nurses have been appointed to take care of communicable disease work. The sanitary police force has been reduced from seventeen members to five. We are now furnishing disinfectants in cases of typhoid fever. Administer antityphoid vaccine to those applying for it. We also furnish the vaccine gratis to physicians for use in their practice. Cultures are taken from all contacts in diphtheria cases. Automobiles are now being used by the dairy farm inspectors, three of them having been purchased. The records are now being kept so that the cost of any branch of department work can be told at a glance.

"A thorough study of the milk supply is now being made, as recommended, and better milk will surely result. It was recommended that all surface wells in the city be eliminated; this is being done as fast as examination can be made, it having been ruled that in this way only could the well be ordered closed. The work of assembling all laws and regulations referring to health work is now under way; when compiled they will be printed in pamphlet form for use of the employees.

"The creation of a department of health, under the new charter, instead of the health department being a division under the department of welfare; placing the health officer on full-time; coöperation of police force in suppression of nuisances; placing isolation hospital under control of health department; the extension of sewers and water mains to all parts of city; combining the work of the Thalian Society with the health department; more frequent collections of garbage and rubbish; the appropriation of $75,000.00 for health department work are all matters beyond our control but efforts will be made to have the proper parties put them in effect."

*

A New Registration Law.—The *Survey* of August 14 calls attention to the following legislation enacted this year in Oregon:

"The law requiring registration of births and deaths was revised and made possible of enforcement throughout the state. A local registration bureau, the officers of which are responsible to the state board of health, is provided for in every incorporated town of 2,000 population or more. Each bureau has jurisdiction over certain districts, which include settlements not incorporated."

*

Typhoid as a Means of Suicide.—A recent bulletin issued by the North Carolina State Health Department quotes a man living in North Carolina who believes that it is almost equal to suicide for anyone to die of typhoid, when the inoculation, which is being so widely practised in that section, is made so easily available. This gentleman is quite incensed to note that, although the inoculation is being offered free in his city less than half of the people

have accepted it. He says that, while he does not really believe a man who gets typhoid through neglect to take the inoculation which is offered to him, has deliberately chosen to die rather than to live, he does think that such a man is largely responsible for his own death if it comes as a result of typhoid.

If half or nearly half of the people in this man's community have been inoculated against typhoid he should not despair but rejoice that a great miracle has been wrought. The treatment of any large proportion of the population of any community with a prophylactic treatment which is a new, or comparatively new procedure, should be regarded not as a small result indicative of a discouraging outlook, but as a glorious indication of the better day that is coming in the world of things which make for public health.

⚜

Work of Rockefeller Sanitary Commission in North Carolina.—The following resolution of the North Carolina State Board of Health briefly summarizes the work done in that state during the past five years by the Rockefeller Sanitary Commission:

"*The Official Thanks of the North Carolina State Board of Health for the Assistance of the Rockefeller Sanitary Commission.*

"Whereas, the five-year period for which the foundation for the eradication of hookworm disease was established has expired; and

"Whereas, the work of the Rockefeller Sanitary Commission terminated in North Carolina, May 1, 1915; and

"Whereas, the Rockefeller Sanitary Commission has expended the sum of $81,516.23 during the last five years in improving sanitary conditions in North Carolina; and

"Whereas, the work of the Commission has resulted directly in the examination of 267,999 citizens of this state for hookworm infection, in furnishing treatment to 95,618 infected citizens, in improving 1,796 privies and, indirectly, in an extensive development of an intelligent appreciation for public health work along all lines of sanitation; therefore be it

"*Resolved*, That the North Carolina State Board of Health do hereby officially record their appreciation of the work in this state during the last five years of the Rockefeller Sanitary Commission; and be it

"*Further Resolved*, That a copy of these resolutions be sent to the successors of the Rockefeller Sanitary Commission, to wit, the International Health Commission, and that these resolutions be given public notice through the Bulletin of the North Carolina State Board of Health."

This resolution, which was printed on the cover of the *Health Bulletin* for July, constitutes a dignified and well-chosen means of publicly expressing the appreciation of the work of the commission, which the health authorities and the people of North Carolina must feel.

⚜

Score Cards for Eating Places.—The Bulletin of the Health Department of Asheville, N. C., contains the "Scores" of about thirty restaurants. Both equipment and methods are taken into consideration and then the final score is determined. These scores run as high as 98 and as low as 50.

The points allowed on the score card are as follows:

EQUIPMENT

Construction 10—Floors and drainage 7, walls 2, ceilings 1.

Arrangement 7—Proper rooms, 4 convenience 3, light 5, ventilation 5, screens 5, cellar 3.

Plumbing 20—Kind, quality, location and condition—water closets 10, sinks 10.

Equipment 25—Kind, quality, arrangement—ice boxes 15, tables 5, utensils 5.

Water for Cleaning 20—hot 15, cold 5—total 100.

METHODS

Cleanliness 20—Floors 5, walls 3, ceilings 1, doors 1, windows 1, good order 1, free from odor 2, freedom from flies 6.

Equipment (*Cleanliness*) 30—Ice boxes 10, tables 5, sinks 5, utensils 10, employees' cleanliness 5.

Foods 30—Conditions 10, storage 10, handling 5, cleanliness 5.

Garbage Receptacles 15—Adequate 5, location 5, condition 5—Total 100.

Score for Equipment . . .; multiplied by 1 . . . . . .
Score for Methods . . . . .; multiplied by 2 . . . . . .
Total to be divided by 3 . . . . . .
Final Score . . . . . .

Remarks. (To cover such unusual conditions as sleeping accommodations, or the presence of domestic animals in or about work room, etc.)
. . . . . .

Manufacturer of Disinfectants Makes Misleading Statements.—The bulletin of the New York City Health Department, November 6, makes the following statement in regard to the unreliable claims of disinfectant manufacturers:

Without detracting from the value of disinfectants when properly used, health officials have come to learn that much of the so-called room disinfection heretofore practised during and after infectious disease was unnecessary and are placing their main reliance on mechanical cleansing with soap and water, followed, if possible, by sunlight and fresh air.

The manufacturers of disinfectants, on the other hand, continue to allege the advantages of their various preparations, and in support of their position often make alarming and misleading statements concerning the mode of spread of infectious diseases. Thus the suggestion was recently made that "during the course of such diseases as typhoid fever the germ can be recovered without difficulty from horizontal surfaces near the bedside," and that on account of this circumstance "the Department of Health should require the periodic cleansing with antiseptic fluids of the furniture and floor about the bed."

In order to test the validity of this statement and the need for the suggested action, the Bacteriological Division of Mt. Sinai Hospital recently undertook a careful investigation, during the course of which more than forty cultures were made. The results were uniformly negative so far as the presence of a motile bacillus or any bacillus resembling the bacillus of typhoid fever was concerned. Staphylococcus was recovered in some instances, and in others contaminated cultures were obtained; but in no instance as already stated, was there any evidence of the presence of typhoid bacilli.

❦

Pollution of Streams by Municipal Sewage. Damages Awarded against a City because of the Pollution of a Stream by Its Wastes.—The city of Henderson, Ky., discharged its sewage into a small stream called Canoe Creek. The slop from a distillery, which was for some time discharged with the city sewage, settled to the bottom of the creek and decomposed, killing the fish, making the water unfit for drinking by stock, and creating a stench. Owners of property along the bank of the stream brought suit against the city and the operator of the distillery for damages to their property.

The Court of Appeals of Kentucky decided that the city was liable, but relieved the operator of the distillery, holding that, as the city had permitted the distillery to connect with the city sewers and had made no attempt to regulate the character of matter discharged from the distillery into the sewers, the city was responsible for the damage done.

The essential part of the opinion is published in the Public Health Reports at page 3303.

❦

Alcohol, Syphilis, and Gonorrhea, on Death Certificates.—The following is an important suggestion from the *Bulletin of the American Social Hygiene Association:*

A recent bulletin of the Department of Health of New York City says: "The Department of Health has long since felt the need of more accurate statistics of the influence of alcohol on mortality and has realized that numerous deaths wherein alcohol, if not the primary cause, at least played an important rôle, have been recorded without reference being made to this important etiological factor. This, of course, is true also of deaths in which gonorrhea or syphilis has played a part. We appreciate the numerous and weighty reasons that induce physicians, if not to hide, at least to withhold this information. On the other hand, we should be shirking our duty as health officers if we did not make serious attempts to secure this information in order that it may be made the scientific basis of a campaign against these grave menaces to public health.

"In order to secure some degree of correctness in the statistics bearing upon the influence of alcohol on the death rate, the Bureau of Records has long been directing confidential letters of inquiry to physicians who report deaths in which it is apparent from the cause specified that alcohol or venereal infection has been a factor in terminating life. This method, while it has been helpful, has not proven sufficiently effective, and the department, therefore, appeals to physicians through the *Bulletin* and asks that in every case where these factors have been a contributing cause of death, they state that fact upon the certificate. Any objection to this procedure may be met by the employment of medical terminology, such as Ethylism Neuritis

(Ethylic), Ethylic Hepatitis, Salpingitis (probably Neisserian), Hepatitis (probably Spirochetal).

"Still another plan is to send a brief note sealed with the certificate. This information thus obtained will be treated in the strictest confidence and the note immediately destroyed. We urge upon the physicians the broader duty which they owe the community not to allow their sense of obligation to patients to stand in the way of supplying the Department of Health with this most important information."

Public Health Notes.

Cancer Mortality.—F. V. Beitler, Baltimore (*Journal A. M. A.*, October 16, 1915), discusses the mortality statistics of cancer as given by the census bureau. He says while the figures which he has used are, within the limit of slight error, correct, such questions as the relation of unimproved methods of diagnosis to the cancer mortality or the relation of changes in the composition of the population to the same must be given careful consideration in the final analysis of any cancer statistics. His survey of the cancer mortality covers the ten years from 1904 to 1913 in the registration area. A steady increase is noted in his table in all years except 1906. During these ten years the reported deaths from this cause increased from 23,395 in 1904 to 49,928 in 1913, and from a mortality of 70.15 per 100,000 in 1904 to 78.88 in 1913. In the year 1904, cancer deaths in males constituted 1.61 per cent. of the total mortality; in the year 1913, 2.25 per cent. In the female population for the year 1904, the cancer mortality was 2.63 per cent. of the total, and in the year 1913, 3.35 per cent. With regard to age distribution, he gives tables constructed from the registration states for the decennium between 1900 and 1910. Referring to these tables it is seen that in the year 1900, 10 per cent. of the cancer mortality occurred prior to the fortieth year of life, and in the year 1910, about 9 per cent. After the fortieth year the deaths per 100,000 show an increase in the year 1910 over all rates in the year 1900; furthermore, the increases are progressive, that is, the greater the age period the greater the relative and absolute increase. The greatest increase in mortality rates is seen in the charts in the age period from 80 to 90 years, which was 587.44 per 100,000 of the population in 1900 and 811.87 per 100,000 in 1910. With regard to the location of the cancer in the body, the most frequent sites as shown by the mortality are the stomach and liver. The next in frequency is cancer of the female genital organs. Cancer in the intestines is followed closely by cancer of the breast in order of frequency. The figures altogether lead to one conclusion: cancer mortality is increasing. Undoubtedly new methods of diagnosis have greatly facilitated the detection of cancer, especially in the incipient stage. The diagnosis of advanced cancer is in most cases much simpler. There is very little change in the relative sex mortality. Any change which would add to the population over 40 years of age would increase the cancer mortality, but Beitler's statistics taken from the census reports do not show much difference in the proportions of the population in the different years. He says: "If we cannot account for the increase in the cancer mortality by better diagnosis or by changes in the composition of the population, I submit that for the past decade the cancer rates in the registration area show a true increase."

✤

Expensive Failure to Register Birth.—The failure to register the birth of a child often creates amusing circumstances, and this was well illustrated last month at the Virginia State Fair when, in the "Better Baby Contest," a 99 per cent. child, judged 1½ per cent. higher than any other child shown, could not receive the gold medal.

The child's birth had not been registered in accordance with the law. Strange to say, the child's father is a physician.

✤

Vacation Typhoid.—After the summer vacation period is over it is only natural that a number of articles should appear on vacation

disease. The causes for the greater opportunities of infection, and the danger of inferior and inadequate sanitary facilities which prevail in many temporary or seasonal resorts are well known.

An interesting article on this subject has appeared in the August *Monthly Bulletin* of the Indiana State Board of Health. It mentions the primitive sanitary accommodations of many of the simpler resorts, the lack or at least the inadequacy of sanitary supervision, the varied type of hotel help, the carelessness and ignorance of the dairy and ice-cream dealers, who cannot afford the expense of a safe product.

It is clear that under the above conditions, well-to-do people, who, at home, insist on safe water and pasteurized milk, become extremely susceptible to infection.

Finally the *Bulletin* suggests three ways by which the problem of the insanitary summer resort may be met:

"1. Persons who have not had typhoid should be vaccinated before going.

"2. Every person before going to any summer resort should find out either from the proprietor of the hotel or the State Board of Health just what the sanitary conditions are.

"3. Every person conducting a summer hotel or boarding house should obtain a license of the State Board of Health, the fee for which should be large enough to cover the cost of a thorough sanitary survey of that hotel or boarding house."

✻

The Schick Test.—Two years ago Schick, of Vienna, described the skin test for the presence of diphtheria antitoxin in the blood. Quoting the New York City's Health Department *Bulletin* for October 16:

"The application of the Schick test will serve as a reliable clinical help in selecting the individuals who need prophylactic injections of antitoxin, after they have been exposed to diphtheria. In the homes among the relatives of patients suffering from diphtheria, in schools and orphan asylums after an outbreak of the disease and as a routine procedure on patients, nurses, and resident staff in general and contagious disease hospitals, the use of the Schick test not only results in a great saving of antitoxin, but also avoids unnecessarily sensitizing more than one half of the exposed individuals."

A positive reaction is sufficient to indicate less than 1-30 of a unit of antitoxin in 1 cc. of blood serum, which shows that the individual tested is susceptible to diphtheria.

The *Bulletin* continues:

"The great difficulty in popularizing the test and placing it within the reach of the general practitioner has been, on the one hand, the inconvenience of handling the undiluted toxin, and, on the other hand, the rapidity with which the diluted toxin deteriorates on keeping, whether in solution or in tablet form. An outfit has been devised to furnish a standard amount of undiluted diphtheria toxin, which remains of fairly constant strength when kept in the ice box, and can be readily diluted when required. The outfit is supplied to physicians in New York City by the Bureau of Laboratories of the Department of Health. We have every reason to believe that it will be found convenient and reliable."

✻

London's Opinion of Inoculation in United States.—"In the United States of America, where the risks of typhoid infection are considerably greater than in this country, there has recently been an enormous increase in the number of persons voluntarily seeking inoculation. Not alone is this increase manifested among government and municipal employees, but the general public is also awakening to the value of this protection. Reports from general practitioners indicate that many of the people are receiving the preventive treatment, and laboratory establishments have had a greatly increased demand for the vaccine. So great is the call among employees of the government that it has been necessary to issue a second edition of the secretary of the treasury's circular, stating the localities where the treatment may be received. It is estimated that during 1914 over 100,000 persons throughout the country were immunised, and it is believed that in 1915 the number will exceed 300,000. The United States Public Health Service is confident that more widespread recognition of the benefits conferred by anti-typhoid immunisation will have an immediate effect upon the morbidity and mortality rates for the disease. As a result of sanitary measures alone, the death-rate from typhoid has been cut in half during the last fifteen years; it is expected that what has been done in fifteen

years of sanitation can be accomplished in as many weeks with inoculation. Dr. J. Dill Roberston, health commissioner for Chicago, in a recent issue of his monthly bulletin, claims that if immunisation attains the general recognition that smallpox prevention has secured, typhoid will be a rare disease by 1930. This means, he says, that even many of the older physicians of today will live to see the time when the infection will no longer be common, though the entire elimination of the disease is not to be looked for until universal immunisation is practiced. To this end Dr. Robertson urges that the general public must be taught the value of the remedy and the need of it."—*The Medical Officer*, London, October 16, 1915.

✱

Carbon Bisulphide as Insecticide and Germicide.—"According to an article appearing in the *Wiener Klinische Wochenschrift*, April 15, 1915, carbon bisulphide has been found to meet all the requirements of a louse-destroying agent. It is prepared by passing sulphur fumes over red hot coal. When fresh it has a disagreeable odor which it loses on distillation. A large tin can is three-fourths filled with carbon bisulphide and 150 grams of paprika and 250 grams of flores sulphuris are added for every kilogram of carbon bisulphide. The clothes are hung up and the mixture is placed in tin trays and lighted. At the end of two hours, the lice as well as the eggs are destroyed. The residue remaining in the tin trays may be used as a deodorizing agent. The results obtained with carbon bisulphide as a remedy against lice have been so satisfactory that it was thought to be of value as a bactericide. Pieces of cloth soaked in bouillon cultures of typhoid and cholera and later allowed to dry were exposed to the fumes and after two hours the bacteriological examination was negative. Pieces of cloth impregnated with bouillon cultures of the same organisms and placed in Petri dishes were exposed for the same length of time and the examination was again negative. Fresh virulent cultures of the organisms, in both open and closed reagent bottle, were likewise exposed and with a single exception (one tube of cholera bacilli) the subsequent examination was negative. Slant agar cultures were also killed in the same length of time. From these investigations it would appear that this agent acts not only against lice but also against pathogenic bacteria which may be present in clothes."—*The Medical Officer*, London, October 23.

✱

Complement Fixation in Pertussis.—"The most reliable antigen for complement fixation tests in whooping cough was obtained by Olmstead and Luttinger, by autolyzing an aqueous emulsion of a twenty-four to forty-eight-hour growth of the Bordet-Gengou bacillus for from eighteen to twenty-four hours at 56 C. and shaking for several hours. The closeness of relationship of the Bordet-Gengou strains is still under investigation. To obtain the maximum number of positive reactions it may be necessary to use a polyvalent antigen. Active serum may give nonspecific positive reactions. A negative reaction given by active serum is stronger evidence of the lack of an infection than is a negative reaction given by inactive serum. For fixation one-half hour in the water bath or one hour in the incubator is absolutely reliable. Icebox fixation probably gives reliable results; the optimum period is still to be determined. Fixation at room temperature for four hours is unsatisfactory, at least in rooms with variable temperature. About 40 per cent. of whooping-cough cases have given a positive reaction with antigens of the Bordet-Gengou bacillus, when inactive serum wns used. The highest percentage of positives is given by convalescent vaccinated cases. Ten per cent. of whooping cough cases have given a positive reaction with antigens of hemoglobinophilic strains. A + +, + + +, or + + + + reaction by inactive serum with an antigen of the Bordet-Gengou bacillus is diagnostic of whooping cough, a + or ± reaction is suspicious, a negative reaction has little significance. Complement fixation tests on serum from 111 cases of pertussis or suspected pertussis support the theory that the Bordet-Gengou bacillus is the etiologic factor in the disease."—*Journal American Medical Association*, from Archives on Int. Medicine, July, 1915.

✱

Marriage and Tuberculosis.—The following is the head-note of a New York Supreme Court decision holding that a wife is entitled to a decree annulling her marriage to a man who at the time concealed from her the fact that he was suffering from tuberculosis:

"It is proper for a court, in view of the widespread prevalence of tuberculosis and the disas-

trous consequences to those who suffer from it, to take judicial notice of its infectious character and the fact that close association with a person afflicted with that disease, unless attended with great care, occasions danger of infection to those coming into close contact with such person.

"The fraudulent concealment of material facts concerning the condition of his health by one party to a marriage contract justifies the legal annulment of the marriage at the instance of the other party.

"The defendant knew before the marriage that he was suffering from tuberculosis. He concealed this fact from the plaintiff, and represented that certain symptoms of the disease were the result of a cold. Upon discovery of the facts the plaintiff ceased to cohabit with him. No offspring resulted from the marriage. The court annulled the marriage on the ground of fraudulent concealment and misrepresentation. *Sobol v. Sobol*, 150 N. Y. Sup., 248.—New York City *Bulletin*, October.

✻

The Problem of Rural Health Administration.—The following is an abstract from an editorial published in *The Journal of the American Medical Association* for October 16, 1915:

"The problem of securing efficient administration of public health laws is especially difficult in the rural districts. City and town can today obtain the best health service for which they are prepared to pay. The small community, on the other hand, unless the circumstances are exceptional, cannot command the various kinds of expert knowledge, medical and sanitary, chemical, bacteriologic, engineering and statistical, which are essential for the adequate handling of its problems.

"Attempts along several different lines have been made to meet this need. In many Southern states, health officers are provided for on the basis of county units. In Massachusetts an interesting plan of voluntary community coöperation has been worked out under the guidance of the public health faculty of the Massachusetts Institute of Technology. The most promising plan of all is perhaps the organization of a corps of state sanitary supervisors, acting under the direction of the State Board of Health and bringing to the support of the local health officer the technical knowledge and the moral support of the entire state.

"This system has been in force in Massachusetts, in one form or another, for nearly ten years. It has been incorporated in the new public health law of Maryland, and two years ago was made part of the model health law of New York State.

"Those who have followed the development of state health organization in this country noted with satisfaction how the attacks made by the legislature on the New York health law last spring were in the main brought to naught by the remarkable support which that law received from the press and the people of the state. What the politicians dared not do openly they attempted, however, to effect by the familiar method of indirection. It appears that while the plan to cut down the number of state sanitary supervisors in New York from twenty to ten was abandoned, the appropriations made allow only for ten of these important functionaries. If the next legislature does not make special provision for this need, the work of the New York state department will be seriously crippled."

"It is gratifying," says *The Journal of the American Medical Association*, "to observe that Governor Whitman, in his address of welcome to the American Public Health Association at Rochester, on September 7, placed himself fairly on record against such petty politics."

✻

An Inspection Clinic.—Sir George Newman, chief medical officer of the Department of Education of London, thus tersely describes the function of the inspection clinic:

1. The further and fuller examination of children referred as a result of medical inspection in the school.

2. The examination of children referred in regard to fitness to attend school, or to undertake physical exercises, swimming, school journeys, etc.

3. The examination of candidates for admission to special schools—schools for the deaf, blind, mentally and physically defective, open-air schools, etc.

4. The supervision of children suffering from such conditions as uncleanliness and ringworm.

5. The periodical supervision of all cases of phthisis.

6. The inspection of children who have suf-

fered from infectious and contagious diseases, and of "contacts" prior to their return to school.

A Treatment Clinic.

Treatment clinics should have facilities for the treatment of all afflictions of school children which require no operative or bed treatment. Considered generally there should be:

1. A General Medical Service: To treat minor ailments, cases of accident and emergency cases. Here treatment and instruction in cleaning the head, eyes, ears, mouth, etc., might be given.

2. Ophthalmic Division: Errors of refraction. Diseases of the eye.

3. Orthopædic Department: To correct and treat orthopædic defects (non-operative).

4. The operative department for nose and throat work should be located, if possible, adjacent to the school.

5. Dental Clinic.

Socializing Health.

Assuredly this is a step in the direction of ultimately socializing the doctor and the dentist, just as education is socialized. No one will complain that the private preserve of profit of the educator has been invaded. It has been enlarged and in an organized way is doing a work which no private enterprise could parallel. It will be a great step forward when the state will employ the medical and dental professions to prevent disease instead of subsisting on its cure.

⚜

Mobile Laboratories with the Army in France.—The introduction into field operations of mobile laboratories is one of the outstanding features of the medical arrangements of the British Expeditionary Force. In the early stage of the war there were only one or two of them, but now there is quite a fleet. Each can do its work, if necessary, even in a neighborhood where buildings are entirely lacking. The common aim of the laboratories is to provide any additional scientific data which may from time to time be required when the general principles of preventive medicine are being applied at the real front. They therefore seek to lessen the wastage due to contagion, air-borne, food-borne, or water-borne disease. The work done includes the testing of urine of every man of a whole division who was known or suspected to have previously suffered from enteric fever, with a view to the discovery and removal of carriers; the diagnosis of cerebrospinal meningitis and the watching of contacts and supervising bacteriologically the treatment of acute cases of this disease by various specifics. Some very useful work has been done in dealing with the typhoid fever epidemic among the Flemish; in addition to all actual cases being brought under treatment, and the homes of the patients put into proper sanitary condition, over 20,000 people applied for antityphoid inoculation and about 80 per cent. of these returned for the desirable second dose. The whole business of dealing with zymotic disease has been excellent; the zymotic morbidity curve, and especially the typhoid curve, has been, so far, kept down to a satisfactory low level which, considering the number of men, is noteworthy."—*The Journal of State Medicine*, London.

⚜

The Prevention of Pellagra.—In the October 22d Public Health Report of the U. S. Public Health Service, there is published a long careful report on the above subject. The investigation was carried out by Joseph Goldberger, surgeon; C. H. Waring, assistant surgeon; and Daniel J. Willets, assistant epidemiologist, U. S. P. H. S. The results reached were deduced from a test of the diet among certain institutional inmates. Below are set down certain portions of the report describing the cause for this investigation, its purpose and the general conclusions.

"In a paper published June 26, 1914, attention was called to certain epidemiological observations relating to pellagra which appeared inexplicable on any theory of communicability. These observations showed that, at certain institutions at which pellagra was either epidemic or had long been endemic among the inmates, the nurses and attendants, drawn from the class economically and socially identical with that most afflicted in the population at large, appeared uniformly to be immune, although living in the same environment and under the same conditions as did the inmates. Neither 'contact' nor insect transmission seems capable of explaining such a phenomenon. It was suggested that the explanation was to be found in a difference, which was believed to exist, in the diet of the two groups of residents.

"From a study of the dietaries of certain institutions in which pellagra prevailed, the impres-

sion has been gained that cereals and vegetables formed a much greater proportion in them than they did in the dietaries of well-to-do people; that is, people who as a class are practically exempt from pellagra. It was suggested, therefore, that it might be well to attempt to prevent the disease by reducing the cereals, vegetables, and canned foods and increasing the fresh animal foods, such as fresh meats, eggs, and milk; in other words, by providing those subject to pellagra with a diet such as that enjoyed by well-to-do people, who as a group are practically free from the disease."

* * * * * *

"All that they wish to say at present is that the dietary 'fault' upon which in their judgment the development of pellagra essentially depends is capable of being corrected or prevented by including in the diet a suitable proportion of these foods. Nor are they to be understood as meaning that the pellagra-causing 'fault' is capable of correction or prevention in this way only. The possibility is not excluded that there may be other foods capable of serving the same purpose. Indeed, there is some reason to justify at least a suspicion that barley, rye, and millet may have this power in some degree.

"Moreover, it may be, if Funk's suggestion that pellagra is a vitamine deficiency, brought about by the consumption of overmilled corn, is proven to be correct, that the use of undermilled corn will of itself correct the 'fault' in a diet in which this cereal is the staple. For the present at least the point of chief, of fundamental, practical importance is the recognition of the fact that the pellagra-producing dietary 'fault,' whatever its essential nature or however brought about, is capable of correction or prevention, as the results presented seem to clearly indicate, by including in the diet suitable proportions of the fresh animal and leguminous foods."

Summary and Conclusion.

"1. The diet at two orphanages, 'M. J.' and 'B. J.' for several years endemic foci of pellagra, was modified in accordance with the directions of the writers in September, 1914. Hygienic and sanitary conditions have remained unchanged.

"2. The modification in the diet consisted principally of a marked increase in the fresh animal and the leguminous protein foods.

"5. At the Georgia State Sanitarium, an epidemic focus of pellagra, a ward of pellagrins in the colored female service and one in the white female service was organized for a test of diet in the prevention of pellagra.

"The diet in these wards was modified on the same principle as that at the orphanages. The institutional routine and the hygienic and sanitary conditions have remained unchanged.

"7. Since the change of diet, there has not been observed this year any recognizable evidence of a recurrence in any of the pellagrins in these wards, 72 of whom (36 colored and 36 white females) have remained continuously under observation throughout this period.

"8. During the corresponding period of observation, not less than 15 (47 per cent.) of 32 control female pellagrins have presented recurrences.

"9. The conclusion is drawn that pellagra may be prevented by an appropriate diet without any alteration in the environment, hygienic or sanitary."

Recently (Nov. 12) the U. S. Public Health Bulletin published the results of further investigations by Goldberger. The possibility of producing pellagra in the healthy human white adult male by a strictly one-sided mainly carbohydrate (cereal) diet was tested. It took place at the farm of the Mississippi State Penitentiary.

Of the volunteer squad, eleven men, between the ages of 24 and 50, remained on the test from February 4 until October 31, 1915. The men were carefully watched to be sure of no evidences of pellagra before the food test commenced. Controls were kept, work was as usual, sanitary conditions were the same. Six of the squad developed symptoms justifying a diagnosis of pellagra. No others in the camp showed any signs of the disease.

Conclusion: The conclusion is drawn that pellagra has been caused in at least six of the eleven volunteers as a result of the restricted diet on which they subsisted.

Industrial Hygiene and Sanitation.

How to Start a Safety Campaign.—*Safety Engineering* is the source of this interesting note:

The following suggestions are addressed to the factory manager who has become convinced that safety is an indispensable part of an efficient factory organization, and wants to organize his plant so as to secure the coöperation of his foremen and workmen in preventing accidents.

1. Call your superintendents and foremen together and tell them plainly what you have in mind. Lay before them the experience of other companies in reducing accidents and outline the methods adopted. Ask the National Safety Council for details. Agree on a definite program and make a written outline of the items in the order in which they are to be taken up; the more serious points of danger, of course, should be covered first.

2. Remember the company must show by visible and tangible signs that it means business and will do its part, before it can go to the workmen and ask them to coöperate; therefore the first thing to do is to build safeguards and cover the more serious points of danger.

3. Some one person should be selected to give a part or all of his time, depending on the size of the plant, to the work of looking after the details of safety. He should be known as the safety inspector.

4. During the first six months have frequent meetings of the superintendents and foremen for the purpose of reporting progress, exchanging suggestions and fostering interest and enthusiasm.

5. After considerable guard building has been done, and you have succeeded in getting your superintendents and foremen lined up and interested, then call a meeting of all of your employees. The manager should preside at this meeting and should lay before the men the facts as to the causes of accidents, the large percentage of which cannot be prevented by guards, and the part which the workmen must do. He should frankly state that in the past the company has been negligent and accidents have happened which might have been prevented had proper guards been provided. He should also state with equal frankness that many men have been injured because they were careless and thoughtless. He should say that now a new leaf is to be turned over and the company will go to the limit and will build any guard which is practical, and urge the men to coöperate and all pull together for a safe shop. The superintendent and some of the foremen should also speak at this meeting. If it is possible, have your doctor speak on first aid and the importance of reporting slight injuries.

6. At this meeting appoint a workmen's inspection committee and outline its duties. Make it plain that the members of this committee are to have absolute liberty to make any inspection they wish, and to offer as many suggestions as possible—the more the better. Urge every employee to report suggestions to the committee.

7. Select a safety motto for the shop, such as:

"No accidents."
"Stop Accidents."
"A Safe Shop."
"Boost for Safety."
"Safety First."

8. Place bulletin boards in each department and post on them such materials as the following:

The motto of the shop in large letters.

Pictures of injured men with stories of the accidents.

Newspaper clippings of accidents.

Copy of suggestions made by workmen's committee.

Analysis of accidents showing causes.

Monthly report of accident records in the various departments.

National Safety Council bulletins.

9. Remember that the secret of a successful safety campaign is to grip the proposition just as you would a new piece of work in the manufacturing end of your business. Convince every foreman that the company is determined to eliminate accidents, and give them to understand that they are expected to do their part. Be absolutely frank with your workmen and make them feel that you are going to recognize them; give them a large part in the work, and let them know that you will welcome any suggestions.

A safety campaign should start off with vim;

the men should be made to feel that a new leaf has been turned over and everybody is to take a new start; a sort of "all pull together" spirit should be fostered. An enthusiastic start will do more to jar the men loose and awaken interest than months of humdrum plodding effort. One manager who reduced accidents 50 per cent. the first year was asked how he did it. He replied, "I made a noise, and I kept right on making a noise until every man in the shop got to thinking about safety."

Note.—Other activities which will be helpful.

Start a safety campaign in the schools. The children will carry the message home and help to increase the interest of the parents.

Ask the ministers to conduct a safety Sunday.

Secure publicity in the local papers.

Have moving picture films run in the local theaters showing such films as "The Crime of Carelessness," etc. Write National Safety Council headquarters for list of available films.

*

The Rubber Industry.—We are in receipt of a Report of the U. S. Department of Labor on "Industrial Poisons Used in the Rubber Industry" investigated by Dr. Alice Hamilton. The report is some sixty pages in length with fourteen good illustrations of the various important processes of this industry.

The number, location, and products of the plants studied are first discussed, followed by the processes which may be dangerous to the worker, such as vulcanization and rubber cement making.

The general conditions in the rubber industry are reviewed in the next section, among which are described—carelessness in handling industrial poisons; facilities for washing, etc.; employment of women and girls; hours of labor; with the following summary:

"In the main, conditions as to light, ventilation, and physical surroundings in the rubber factories visited are excellent. In the newer plants, especially, there was an evident intention to make the workplaces not only sanitary, but comfortable.

"The processes of rubber manufacturing involve the use of several poisonous substances, of which lead salts, antimony pentasulphide, aniline oil, carbon disulphide, and carbon tetrachloride are the most dangerous. The operations involving exposure of these poisons employ but a small proportion of the workers. No women and very few boys are engaged in such operations. A lesser danger is found in the use of coal-tar benzol and of various petroleum products such as naphtha, benzine, etc. A considerable number of the workers, including women and boys, are exposed to the fumes of these compounds."

The poisons in this industry are lead, antimony, aniline oil, coal-tar products, petroleum products, carbon disulphide, carbon tetrachloride, phenol and other organic compounds. The conditions under which these poisons are used and their general effects, real and possible, are well explained.

There follows a lengthy description of the processes themselves, ten in number, which make up the industry, such as compounding, mixing, buffing and grinding, etc. The general conditions under which these several processes are carried out is well presented, the danger which exists for the employee, also how, in many instances, objectionable conditions may be and have been overcome.

The report is very fair and unprejudiced, and it seems that, though this industry has many possibilities for being unhygienic and dangerous to the health of the worker, in most cases, investigation shows that the great majority of rubber workers suffer no really bad effects from their work. However, the report clearly points out that this industry in America is still unnecessarily unhealthful.

Following is the general summary of the investigation:

"The industry is not, in this country, considered a dangerous one, for relatively few of the workers are exposed to a harmful extent to the poisonous dusts and vapors of these substances. A small number of employees who sift and weigh the lead salts and mix them with rubber run the risk of lead poisoning. An even smaller number of men engaged in compounding rubber and in reclaiming rubber scrap are exposed to the fumes of aniline oil. A few men handle the golden sulphide of antimony, which is used largely in compounding, and a few others use benzol as an ingredient of cement. Among those exposed to these poisons the rubber compounds and mixers show a high rate of lead poisoning. Aniline poisoning is far less frequent than formerly but still occurs.

"A larger number of workers, including many

women, are exposed to the fumes of petroleum, naphtha, and benzine in cementing rubber articles, but these fumes are seldom heavy. In making cement and in making spread and dipped goods heavier fumes of these compounds are produced, but only a few workers, all men, are engaged in these processes. Acute, severe benzine poisoning is rare, but chronic, mild benzine poisoning is probably very common.

"A few men engaged in vapor curing use carbon disulphide in the form of vapor, a few others engaged in dipping use the liquid form, and a much larger number use it for painting the ends of inner tubes. Among the dippers carbon-disulphide poisoning is fairly common; it is less frequent, but still occurs, among those who use the disulphide as a paint or in the form of vapor. In a few factories carbon tetrachloride is used as a substitute for carbon disulphide; it is dangerous but less so than the carbon disulphide.

"There need be little if any trouble from these poisons if proper precautions are taken by the employers. All that is required for the workmen's protection is the prevention of dust and fumes by means of closed receptacles and strong air exhausts, and the provision of washing facilities and clean lunch rooms.

"American rubber factories, even those that are in other respects admirably constructed and managed, are, almost without exception, lacking in the proper protection of workmen against poisons. In consequence the industry is much more unhealthful in this country than it need be."

Wage-Earners and Sickness.—The *Journal of the American Medical Association* says, in reviewing the Final Report of the Commission on Industrial Relations, that while a great deal of time and attention is devoted to accident prevention, accidents cause only one seventh as much destitution as does sickness. Each of the thirty odd million wage-earners in the United States loses an average of nine days throughout the year, at an average cost of two dollars a day. Thus the wage loss from this source is over $5,000,000 while the additional cost of medical treatment, of at least $180,000,000, increases the total sick bill of these wage-earners to $680,000,000 a year. Thirty to forty per cent. of cases requiring charitable relief are due to sickness resulting from poverty, causing insufficient diet, bad housing, inadequate clothing, and unfavorable home surroundings. According to this commission's report, surroundings and place of work and personal habits of the worker are important but secondary facts. This means that, although the investigation and care of the wage-earner while at his employment should not be allowed to diminish in intensity, more relief and bettering conditions at his home must be seen to. The commission submits that the present condition can be satisfactorily corrected only when wages are sufficient to enable the worker to maintain a proper standard of living and to meet the expense of proper medical attendance when necessary. As a present solution the commission recommends a form of sickness insurance to be administered by the government, the fund for this insurance to be contributed by the employer, the employees and the government.

Pay Attention to the Poor Man!—"There can be no real national improvement unless the masses of the people secure higher wages, more reasonable working hours and better conditions of work. Put in words these purposes seem commonplace and even materialistic. But interpreted in human experience, they are of infinite value. Shorter workdays and better conditions of work mean better health, better physical conditions, better bodies and better minds—things that are essential to the best mental development of life and the greatest creative ability. Higher wages mean better food, better clothing, better housing, better surroundings, and opportunities that are essential to mental development.

"There is nothing unimportant about the material necessities for living. These things become a part of the body, a part of the brain, hence a part of the mental and spiritual life of the workers. Nourishing food means sustained life and better life. Minds and hearts can not be sustained without nourishment. In connection with this, attention ought again to be called to the remarkable trenchant statements of Major-General Gorgas in an interview made public some weeks ago. That practical scientist expressed the effect of wages in the following human values:

" 'Add to the laboring man's wage from $1.25 to $2.50 a day, and you will lengthen the average

American's thread of life by thirteen years at least.

"'The rich are overeating. The poor are undereating. Both are contributing to short lives. But where overeating shortens the life of one person in one hundred, undereating shortens that of ninety-nine. If we are to lengthen the average life, we must pay attention to the poor man.'"—*American Federationist*, November, 1915.

✱

Common Causes of Accidents.—"In a recent bulletin issued by the Central Safety Committee of the Commonwealth Steel Company, the principal causes of the accidents occurring in the plants of that Company in the period from January to June, 1915, are given as follows:

Sprains, heavy lifting, etc.	10
Handling heavy objects	8
Dropping handled objects	8
Small tools used by injured	6
Slipping, stumbling, etc.	4
Handling light objects	4
Cuts, scratches from rough edges, splinters, etc.	3
Falling objects	3
Stepping on nails	2
Bad piling of material	2
Flying chips, shavings, etc.	1
Particles in eyes, not wearing goggles	1
Burns, hot substances	1
Nails in core sand	1
Jib crane slings	1
Circular saws	1
Bruises from goggles	1
Total	57

According to the Safety Committee, not one of these fifty-seven accidents was due to a lack of protection by mechanical safeguards but to careless practices on the part of workers, who are urged to coöperate with the Company in eliminating these causes of preventable accidents.—*Safety Bulletin*, American Museum of Safety, November, 1915.

✱

Carelessness.—The Central Safety Committee of the El Paso and Southwestern System issued to its employees a circular, the text of which is given below:

Who Comes Here?

I am more powerful than the combined armies of the world.

I have destroyed more men than all the wars of the world.

I am more deadly than bullets, and I have wrecked more homes than the mightiest of siege guns.

I steal, in the United States alone, over $3,000,000,000.00 each year.

I spare no one, and I find my victims among the rich and poor alike; the young and old; the strong and weak; widow and orphans know me.

I loom up to such proportions that I cast my shadow over every field of labor from the turning of the grindstone to the moving of every railroad train.

I massacre thousands upon thousands of wage-earners in a year.

I lurk in unseen places, and do most of my work silently. You are warned against me, but you heed not.

I am relentless. I am everywhere; in the home, on the streets, in the factory, at railroad crossings, and on the sea.

I bring sickness, degradation and death, and yet few seek to avoid me.

I destroy, crush, maim, take all and give nothing.

I am your worst enemy.

I am Carelessness.

Personal Notes

Dr. Haven Emerson has been appointed Acting Commissioner of Health of the City of New York to succeed Dr. S. S. Goldwater who recently resigned.

Dr. Otto R. Eichel has recently been appointed director of the Division of Sanitary Supervisors in the New York State Department of Health. Doctor Eihel has been with the department for somewhat over a year now. He was formerly chief of the Division of Tuberculosis in the Buffalo City Health Department.

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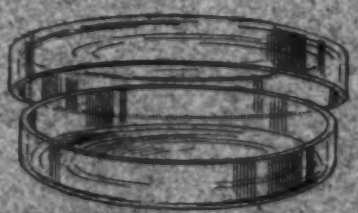

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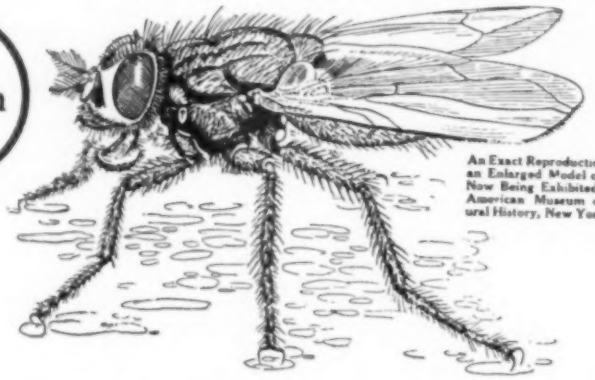

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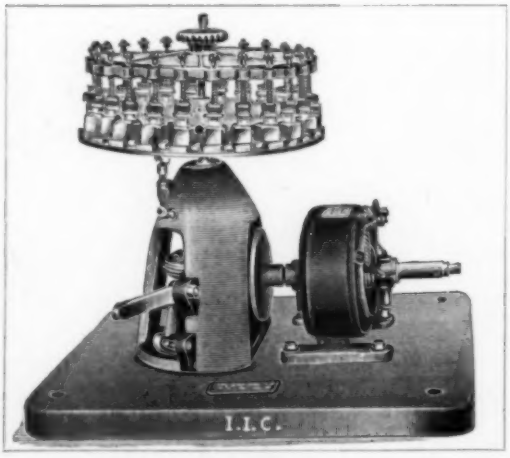

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The Committee of Judges, who will conduct the competition for the prize of $1,000, offered by the Metropolitan Life Insurance Company for the best original pamphlet on social hygiene for adolescents between the ages of twelve and sixteen years is as follows:

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"A NEW MEMBER APIECE"

JOIN OUR BOOSTERS CLUB!

Make a note in your diary that you will be in Cincinnati, October 24, 25, 26, 27.

That is the date which has just been decided for the 1916 Meetings of the American Public Health Association.

The Executive Committee at an enthusiastic meeting held in New York last month went on record that the Association should set itself the slogan of 4000 members by the time of the Cincinnati Meetings. We have 1600 members at the present time. We *want* and *should have* at least 2400 *new* members before October of next year. When one reckons up the great numbers of people actually engaged in health work who are *not* but *should be* members, it can be readily seen that the problem is not such a mighty one after all. Furthermore there are in every community intelligent men and women who if not actually engaged in health work are deeply interested in it.

We know from past history that many of our members are boosters for the Association and its Journal and feel confident that they will do more than is asked of them. The minimum we ask you is to get one new member and do this right away. The maximum you may do depends on your own interest and the time you can give. Get busy. The Secretary has application blanks galore to send you to be filled in. Show your interest by sending in the attached coupon for application blanks at once.

A larger membership means a better association and a better Journal. It is to your own interest to boost the Association. Needless to say it is also in the interest of *our work* and the people whom we serve that we increase the interest of the health workers of the Countries in the Association.

Fill out this blank and send it in today.

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Date.....

Secretary,
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Send me.....application blanks.

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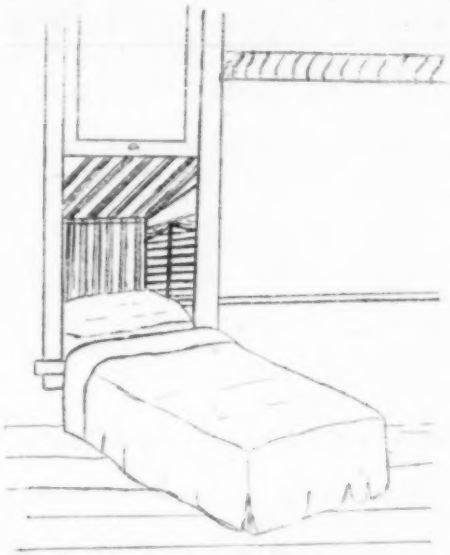

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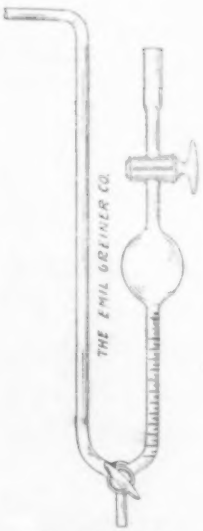

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Some of the Good Things Coming in the January Issue.

A Survey of the Activities of Municipal Health Departments in the United States. By Franz Schneider, Jr., of the Russell Sage Foundation.

Mr. Schneider's ability in making sanitary surveys is well known to health workers. In this article he has compiled not only an interesting but a useful collection of facts relating to many of the major health questions of over 200 cities in the United States. You will be especially interested in his conclusions. Illustrated with diagrams and map.

The Wasters of the World. By Hon. W. C. Redfield, Secretary of Commerce, Washington, D. C.

Mr. Redfield gave the address which the Journal will publish in its January issue, at the Rochester meeting of the American Public Health Association. He points out that in resources and in American manhood there is a stupendous waste each year as a result of inefficient methods in our commerce and industry.

The Rôle of the Newspaper in the Dissemination of Public Health News. By Dr. W. A. Evans, Health Editor, Chicago Tribune.

Dr. Evans has succeeded in a remarkable degree in his use of the newspaper as a vehicle for education of the public in health matters. His "Health Talks" are probably read each day by millions of people. In this article he takes us behind the scenes and tells how health "copy" can be made suitable for the newspaper.

Sixteen Hundred Cases of Sickness and What is to be Done About Them. By Mr. E. A. Moree, Assistant Secretary, New York State Charities Aid Association.

Mr. Moree here reviews in brief newsy style a report on the sickness in one county in New York State which afforded typical conditions in both rural and urban communities for an intensive study of the manner in which cases of illness are handled in the average community.

A Comparison of the Acid Production of the Bacillus Coli Group Isolated From Various Sources. By W. W. Browne, Ph. D., of the College of the City of New York.

In addition to the papers mentioned there will be a description by **Mr. George T. Palmer of the New York Ventilation Commission's staff,** of a new sampling apparatus for the determination of aerial dust. The 1914 report of the **Committee on Occupational Mortality** of the Vital Statistics Section of the American Public Health Association and the Report of the fall meeting of the **Massachusetts Association of Boards of Health** will also be included in this issue.

THE TOPIC OF THE EDUCATIONAL AND PUBLICITY SIDE OF HEALTH WORK WILL BE TREATED IN THE JANUARY ISSUE OF THE JOURNAL IN DR. EVANS' PAPER. THE JOURNAL PROPOSES TO FOLLOW UP THIS SUBJECT IN THE FEBRUARY AND LATER ISSUES WITH OTHER TIMELY ARTICLES.

LOOK FOR THE ANNOUNCEMENT WHICH WILL APPEAR ON THIS PAGE OF THE JANUARY ISSUE.

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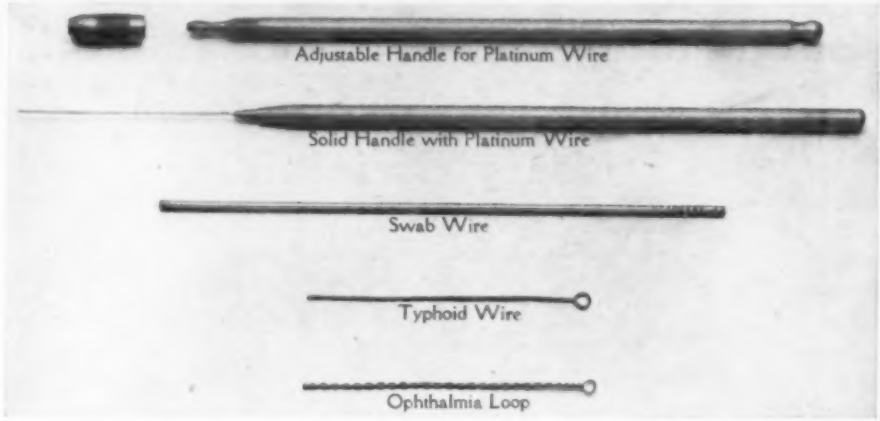

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¶ As announced the Grand Prize was also conferred upon Bausch & Lomb Microscopes in recognition of their superiority in design and construction—optical and mechanical. A Medal of Honor was granted Bausch & Lomb Photomicrographic Apparatus.

¶ Bausch & Lomb Products at the Exposition received four Grand Prix, one Medal of Honor and one Gold Medal, the award in each case being the highest prize granted.

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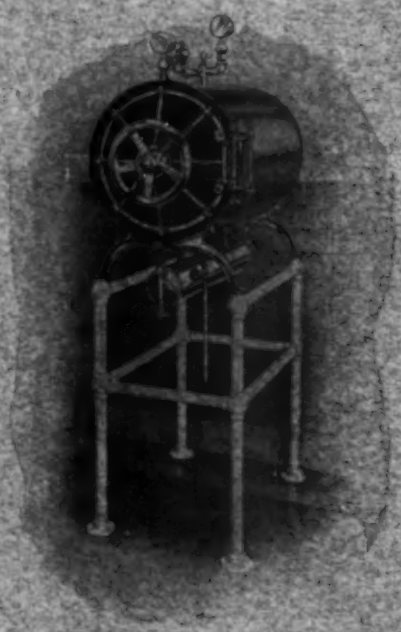

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